V500 Series

IP Phone

User's Guide

Default Login Details	
IP Address	dhcp
User Name	admin
Password	1234

Firmware Version 1.20
Edition 1, 04/2010

www.zyxel.com

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About This User's Guide

Intended Audience

This manual is intended for people who want to configure the devices in the V500 Series using the LCD screen and/or web configurator. You should have at least a basic knowledge of TCP/IP networking concepts and topology.

Related Documentation

- Quick Start Guide

  The Quick Start Guide is designed to help you get up and running right away. It contains information on setting up and configuring the V500.

- Web Configurator Online Help

  Embedded web help for descriptions of individual screens and supplementary information.

- Support Disc

  Refer to the included CD for support documents.

- ZyXEL Web Site

  Please refer to www.zyxel.com for additional support documentation and product certifications.

User Guide Feedback

Help us help you. Send all User Guide-related comments, questions or suggestions for improvement to the following address, or use e-mail instead. Thank you!

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Document Conventions

Warnings and Notes

These are how warnings and notes are shown in this User's Guide.

Warnings tell you about things that could harm you or your device.

Note: Notes tell you other important information (for example, other things you may need to configure or helpful tips) or recommendations.

Syntax Conventions

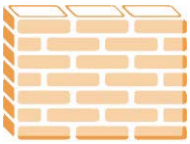
- The V500-T1 or V501-T1 may be referred to as the "V500", the "device", the "system" or the "product" in this User's Guide.

Note: The V500 Series includes the V500-T1 and the V501-T1. Illustrations used throughout this book are based on the V500-T1.

- Product labels, screen names, field labels and field choices are all in **bold** font.
- A key stroke is denoted by square brackets and uppercase text, for example, [ENTER] means the "enter" or "return" key on your keyboard.
- "Enter" means for you to type one or more characters and then press the [ENTER] key. "Select" or "choose" means for you to use one of the predefined choices.
- A right angle bracket (>) within a screen name denotes a mouse click. For example, **Maintenance > Log > Log Setting** means you first click **Maintenance** in the navigation panel, then the **Log** sub menu and finally the **Log Setting** tab to get to that screen.
- Units of measurement may denote the "metric" value or the "scientific" value. For example, "k" for kilo may denote "1000" or "1024", "M" for mega may denote "1000000" or "1048576" and so on.
- "e.g.," is a shorthand for "for instance", and "i.e.," means "that is" or "in other words".
- Screens reproduced here for demonstration purposes may not exactly match the screens on your device.

Icons Used in Figures

Figures in this User's Guide may use the following generic icons. The V500 icon is not an exact representation of your device.

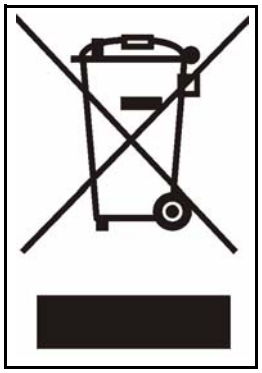
V500	Computer	Notebook computer
Server	DSLAM	Firewall 
Telephone	Switch	Router

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions.

- Do NOT use this product near water, for example, in a wet basement or near a swimming pool.
- Do NOT expose your device to dampness, dust or corrosive liquids.
- Do NOT store things on the device.
- Do NOT install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do NOT open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Use ONLY an appropriate power adaptor or cord for your device. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe).
- Do NOT allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Do NOT use the device if the power adaptor or cord is damaged as it might cause electrocution.
- If the power adaptor or cord is damaged, remove it from the device and the power source.
- Do NOT attempt to repair the power adaptor or cord. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- Do NOT obstruct the device ventilation slots, as insufficient airflow may harm your device.
- If you wall mount your device, make sure that no electrical lines, gas or water pipes will be damaged.
- The PoE (Power over Ethernet) devices that supply or receive power and their connected Ethernet cables must all be completely indoors.

This product is recyclable. Dispose of it properly.



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PART I
User's Guide

1 Introduction

1.1 Overview

This chapter introduces the main applications and features of the V500 Series. It also introduces the ways you can manage your device.

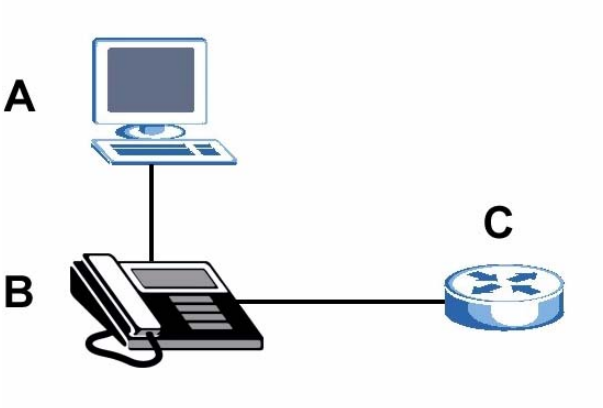
Note: The V500 Series includes the V500-T1 and the V501-T1. Illustrations used throughout this book are based on the V500-T1.

The V500 is an IP phone that allows you to make phone calls over the Internet. Sending voice signals over the Internet is called Voice over IP (VoIP). VoIP allows you to call other IP phones, mobile phones or landlines all over the world.

The V500 is packed with features - including multiple phone lines, multiple SIP accounts, phonebook, conference calls, call transfer, call hold, and many more.

You can configure and manage the V500 directly, using its multi-function keypad and LCD screen. Alternatively, access the internal web configurator using a computer connected to the network for remote administrative configuration.

The V500's Ethernet ports allow you to connect it to your Local Area Network (LAN) and your computer. Your computer can access the LAN through the V500, as shown in the following figure. **A** is your computer, **B** is your V500 and **C** is your modem or router.



At the time of writing, this User's Guide covers the following models.

Table 1 Models Covered

V500	IP phone.
V501	IP phone with Power over Ethernet (PoE) capability.

1.2 Applications

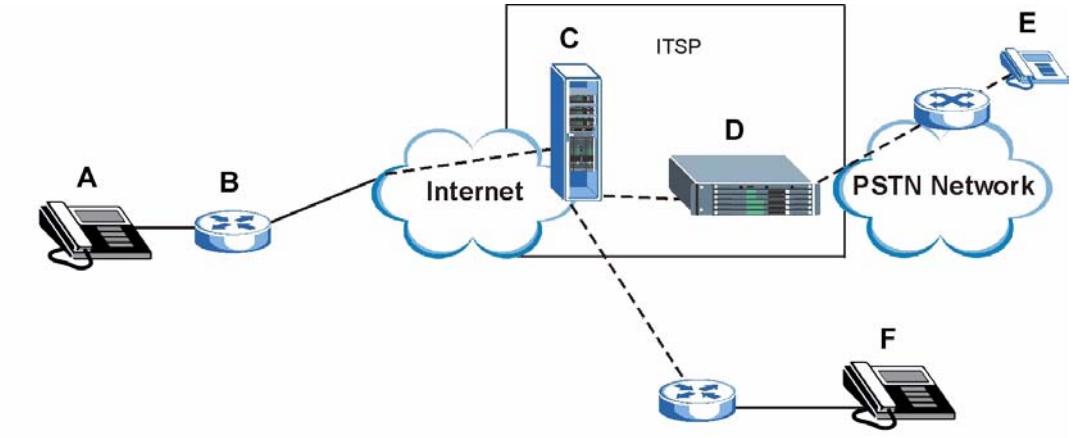
Here are some examples of how you can use your V500.

1.2.1 Make Calls via Internet Telephony Service Provider

In a home or small office environment, you can use the V500 to make and receive VoIP telephone calls through an Internet Telephony Service Provider (ITSP).

The following figure shows a basic example of how you make a VoIP call through an ITSP. In this example, you make a call from your V500 (**A** in the figure), which sends the call through your modem or router (**B**) to the Internet and the ITSP's SIP server (**C**). The VoIP call server forwards calls to PSTN (Public Switched Telephone Network) phones through a trunking gateway (**D**) to phones on the PSTN network (**E**). The VoIP call server also forwards calls to IP phones (**F**) through the Internet.

Figure 1 Internet Telephony Service Provider Application

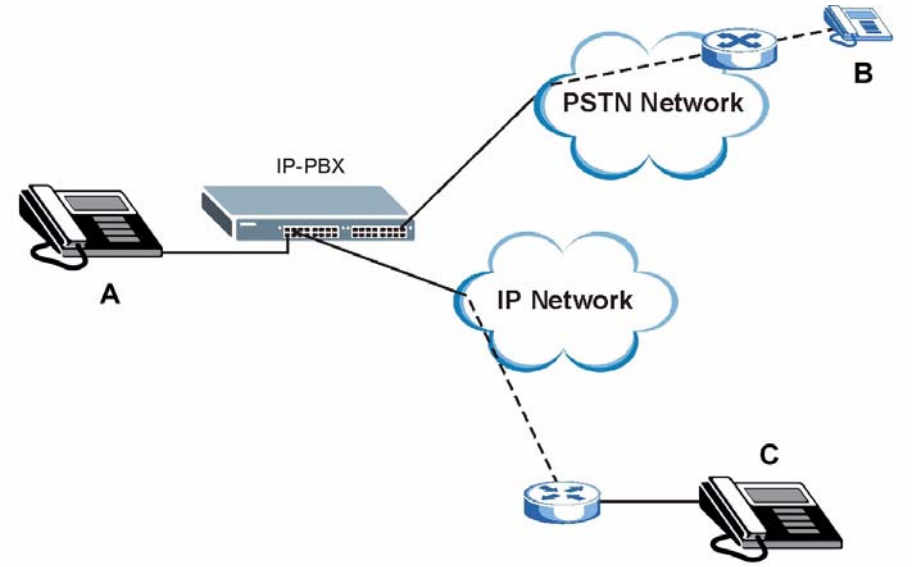


1.2.2 Make Calls via IP-PBX

If your company has an IP-PBX (Internet Protocol Private Branch Exchange), you can use the V500 to make and receive VoIP telephone calls through it.

In this example, you make a call from your V500 (**A** in the figure), which sends it to the IP-PBX. The IP-PBX forwards calls to PSTN phones (**B**) on the PSTN network. The IP-PBX also forwards calls to IP phones (**C**) through an IP network (this could include the Internet).

Figure 2 IP-PBX Application

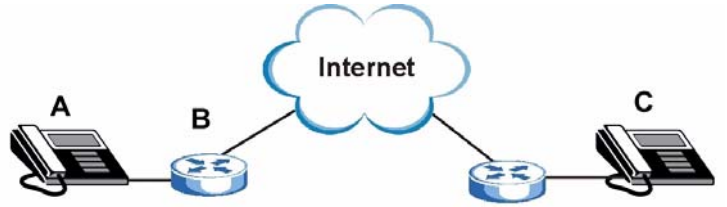


1.2.3 Make Peer-to-peer Calls

Use the V500 to make a call to the recipient's IP address without using a SIP server. Peer-to-peer calls are also called "Point to Point" or "IP-to-IP" calls. You must know the peer's IP address in order to do this.

The following figure shows a basic example of how you would make a peer-to-peer VoIP call. You make a call on your V500 (**A**), which sends your call through your modem or router (**B**) and the Internet to the peer VoIP device (**C**).

Figure 3 Peer-to-peer Calling



1.3 Ways to Manage the V500

Use any of the following methods to manage the V500.

- Hardware keys. Use the control keys and LCD menus on the V500 for basic configuration.
- Web Configurator. This is recommended for everyday management of the V500 using a (supported) web browser.
- FTP. Use File Transfer Protocol for firmware upgrades and configuration backup/ restore.
- SPTGEN. SPTGEN is a text configuration file that you can edit and upload to the device. This is especially convenient if you need to configure many devices of the same type.

1.4 Good Habits for Managing the V500

Do the following things regularly to make the V500 more secure and to manage the V500 more effectively.

- Change the web configurator password. Use a password that's not easy to guess and that consists of different types of characters, such as numbers and letters.
- Write down the password and put it in a safe place.
- Keep the V500 in a safe place. The LCD menus are not password-protected, so anyone using the phone can access your phonebook, SIP account information, etc.
- Back up the configuration (and make sure you know how to restore it). Restoring an earlier working configuration may be useful if the device becomes unstable or even crashes. If you forget your password, you will have to reset the V500 to its factory default settings to access the web configurator. If you backed up an earlier configuration file, you would not have to totally re-configure the V500. You could simply restore your last configuration.

2

Hardware

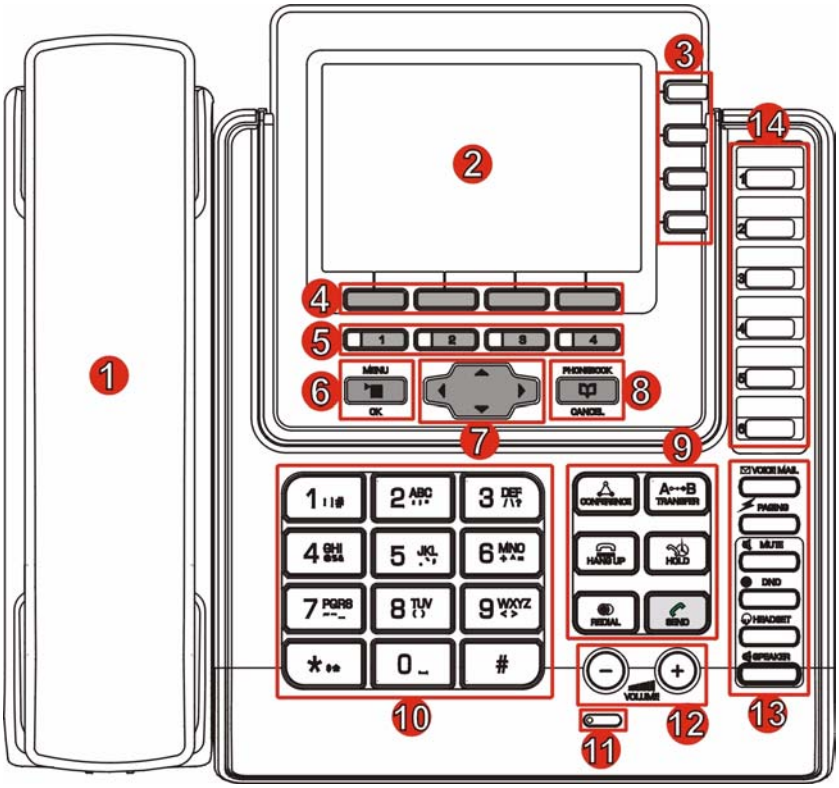
2.1 Overview

This chapter describes the V500's physical features, and how to use its phone functions.

2.2 Physical Features

This section discusses the V500's front, side and rear panel hardware features. See your Quick Start Guide for descriptions of how to set up the V500's hardware and network connections.

Figure 4 Front Panel Hardware



The following table describes the front panel hardware.

Table 2 Front Panel Hardware

LABEL	DESCRIPTION	
1	Handset	
2	LCD (Liquid Crystal Display) screen.	
3	Account keys	Use these to select the SIP account you want to use. You can configure up to four SIP accounts on the V500. The account keys are independent of the line keys - you can use any SIP account with any line. Note: You can select an account only when it has been configured (use the **Advanced Setting** > **SIP Configuration** LCD menus to configure an account).
4	Softkeys	These keys' functions depend on the screen currently displayed on the LCD. A word or symbol displayed on the LCD above a softkey shows its current function. • If "**Select**" displays above a softkey, press the key to choose an entry on the screen. • If "**Add**" displays above a softkey, press the key to add a new entry to the screen. • If "**Edit**" displays above a softkey, press the key to change an existing entry on the screen. • If "**Del**" displays above a softkey, press the key to delete an entry from the screen. • If "**Back**" displays above a softkey, press the key to return to the previous screen. • If "**Cancel**" displays above a softkey when you are editing a field, press the key to return to the previous screen without saving any changes. • If "**<-**" displays above a softkey when you are editing a field, press the key to delete the character to the left of the cursor. • If "**.**" displays above a softkey when you are editing a field, press the key to enter a period.
5	Line keys	Press these to select the phone line you want to use. The V500 has four phone lines. • If a line key's LED is off, the line is not active. • If a line key's LED is on, the line is active. • If a line key's LED is blinking slowly, a call is on hold on that line. • If a line key's LED is blinking quickly, a call is incoming on that line.
6	Menu	Press this to display the V500's configuration menu. When the menu displays, you can press this key again to exit the menu. The menu is not accessible when a call is in progress.
7	Navigator	Use this to move around the V500's screens. Press ▲ to go up one line in a menu, and press ▼ to go down one line. Press ▶ to move one space to the right, and press ◀ to move one space to the left.
8	Phonebook	Use this to display the list of contacts stored in the V500. You can add, edit and delete phonebook entries from this screen.

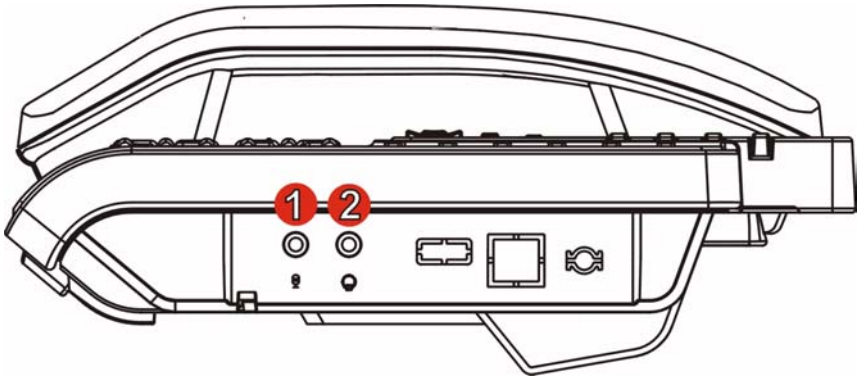
Table 2 Front Panel Hardware (continued)

LABEL	DESCRIPTION		
9	Action keys	CONFERENCE	Use this to set up a conference call between the V500 and two other phones, or to split a conference call you set up into two separate calls.
		TRANSFER	Use this to transfer a call to another phone.
		HANG UP	Use this to end a call.
		HOLD	Use this to put a call on hold. Press it a second time to take the call off hold.
		REDIAL	Use this to dial the last number that was called from the V500.
		SEND	Use this to start a call, once you have entered the phone number.
10	Alphanumeric keypad	Use these to enter numbers, letters and symbols. Use the **#** key to switch between Number mode, Uppercase mode, Lowercase mode and Symbol mode.	
11	Microphone	The microphone is active when the V500 is in speakerphone mode.	
12	Volume keys	Use the **+** key to increase the volume, and use the **-** key to decrease it. • When you use the handset, these keys control the handset's listening volume. • When you use the headset, these keys control the listening volume on the V500's headphone ( ) port. • When you use the speakerphone, these keys control the internal speaker volume.	

Table 2 Front Panel Hardware (continued)

LABEL	DESCRIPTION		
13	Function keys	The LEDs (lights) in these keys illuminate when they are active.	
		VOICEMAIL	Use this to check your voicemail messages, once the voicemail number is configured on the V500. Each SIP account has its own voicemail number.
		PAGING	Use this to call a group of phones, once paging groups are set up on the network and a paging group number is configured on the V500. Each SIP account can have its own paging number. When you do this, each phone in the paging group goes into speakerphone mode automatically.
		MUTE	Use this to mute the current call. The V500 no longer transmits a signal, but you can still hear the incoming signal.
		DND	Use this to toggle the Do Not Disturb function on or off.
		HEADSET	Use this to activate a line using the headset, or to transfer a call to the headset when using the handset or the speakerphone. When a line is active and you are using the headset, press this key to hang up.
		SPEAKER	Use this to activate a line using the speakerphone, or to transfer a call to the speakerphone when using the handset or the headset. When a line is active and you are using the speakerphone, press this key to hang up.
14	Custom keys	Use these to perform functions that you pre-set in the V500 (such as turning caller ID on or off). The functions available depend on your service provider.	

Figure 5 Side Panel

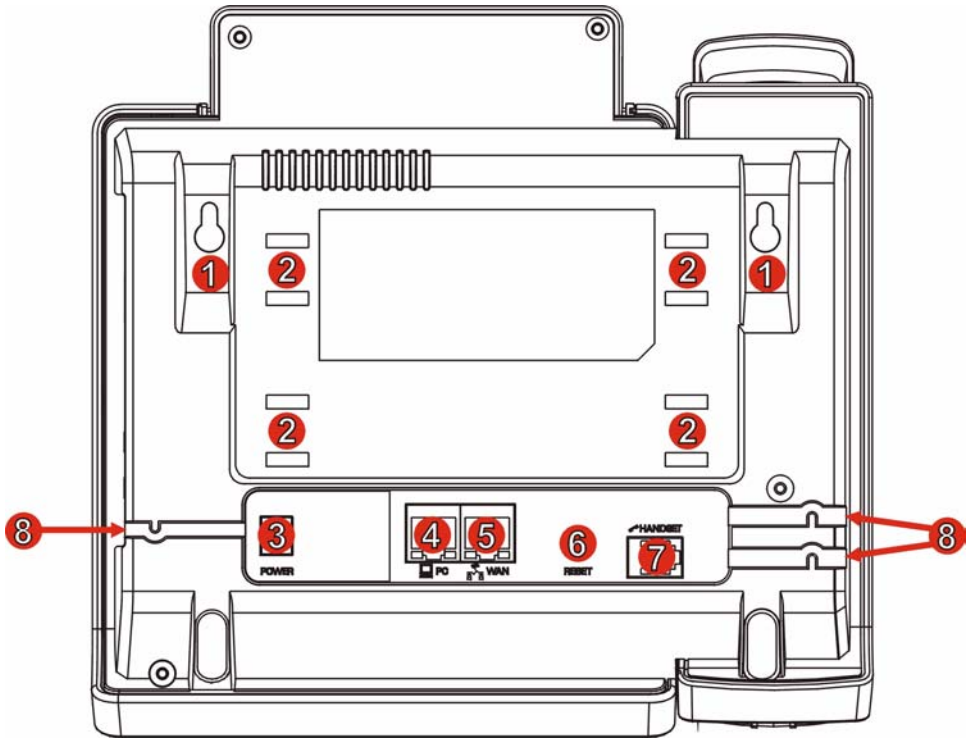


The following table describes the side panel hardware.

Table 3 Side Panel Hardware

LABEL	DESCRIPTION	
1	Microphone socket	Use this to connect a headset's microphone jack, or an external microphone.
2	Headphone socket	Use this to connect a headset's earphone jack, headphones, or an external loudspeaker.

Figure 6 Rear Panel Hardware



The following table describes the rear panel hardware.

Table 4 Rear Panel Hardware

LABEL	DESCRIPTION	
1	Wall-mounting holes	Use these to hang the V500 on a wall (if you do not use the included stand). See the wall-mounting appendix for details.
2	Stand sockets	Use these to attach the included stand (if you do not wall-mount the V500). See your Quick Start Guide for details.

Table 4 Rear Panel Hardware

LABEL	DESCRIPTION	
3	Power socket	Attach the included power adaptor, if you are not using Power over Ethernet (V501-T1 only). See the product specifications appendix for power supply specifications. Note: Use only the power adaptor and cable that came with your V500.
4	PC port	Use an Ethernet cable to connect a computer for configuration, or to access the Internet. An LED turns on when this port is connected, and blinks when there is traffic. The green LED turns on if the connection is at 10Mbps, and the orange LED turns on if the connection is at 100Mbps.
5	WAN port	Use an Ethernet cable to connect to your network. An LED turns on when this port is connected, and blinks when there is traffic. The green LED turns on if the connection is at 10Mbps, and the orange LED turns on if the connection is at 100Mbps.
6	Reset button	Use this to return the V500 to its factory default settings. See the appendix on product specifications for the default settings. Note: If you do this, all configuration changes and data on the V500 are lost, including phonebook records.
7	Handset port	Use this to attach the included handset cable's RJ-11 connector.
8	Cable channels	Clip the V500's power, handset and WAN / LAN cables into these.

2.2.1 The LCD Screen

When the V500 is on, the LCD (Liquid Crystal Display) screen shows either the status screen, a phonebook screen, or a configuration menu.

The LCD menus allow you to configure and control the V500. See Chapter 4 on page 63 for details on configuring the V500 via the LCD menus.

2.2.2 Resetting the V500

If you want to reset the V500 to its factory defaults (if you forgot the web configurator password, for example) press and hold the **RESET** button for approximately ten seconds. The V500 restarts automatically.

Note: If you reset the V500, all settings return to their factory defaults. All data stored in the V500 (phonebook entries, for example) will be lost.

2.3 Phone Functions

This section describes how to use your V500's basic telephone functions. See Chapter 4 on page 63 for information on the using the V500's LCD screen menus and Chapter 5 on page 73 for information on how to use the V500's phonebook.

2.3.1 Making a Call

1 Start the call:

- If you want to use the handset:

  Lift the handset.
- If you want to use the speakerphone:

  Start dialing a number per usual or press the # (pound) key. The speaker comes on immediately upon the first key press. After typing out the phone number, press **SEND** or **#** to dial out.

  You can also press the **SPEAKER** key, an **Account** key, or a **Line** key.
- If you want to use a headset:

  Press the **HEADSET** key.

2 A **Line** key LED turns on. The LCD screen shows which SIP account you are using. Change these, if you want, using the **Line** and **Account** keys.

3 Check that you can hear a dial tone.

4 Enter the number you want to call. If you have numbers stored in the V500's phone book, you can use the navigator to select from the list of entries.

5 Press the yellow **SEND** key.

During the call:

- If you are using the headset or the speakerphone, you can switch to the handset by lifting it off the hook.
- If you are using the handset or the speakerphone, you can switch to the headset by pressing the **HEADSET** key.
- If you are using the handset or a headset, you can switch to the V500's speakerphone by pressing the **SPEAKER** key.

Note that the call ends if you are using the speakerphone and press the **SPEAKER** key, or if you are using the headset and press the **HEADSET** key.

2.3.2 Receiving a Call

When the phone rings, do one of the following:

- Pick up the handset to receive the call using the handset.

- Press the **SPEAKER** key to receive the call using the internal speakerphone.
- Press the **HEADSET** key to receive the call using an external headset.

2.3.3 Ending a Call

When you want to end a call, press the **HANG UP** key. Alternatively, do one of the following:

- If you are using the handset, replace it in the cradle.
- If you are using the internal speakerphone, press the **SPEAKER** key.
- If you are using an external headset, press the **HEADSET** key.
- You can also press the active **Account** key or the illuminated **Line** key at any time to end the current active call.

2.3.4 Changing the Volume

Use the **VOLUME +** key to increase the volume, and use the **VOLUME -** key to decrease it.

- When there is no line active on the V500, the volume keys control the ringing volume.
- When the handset is off hook, the keys control the handset's speaker and microphone volume.
- When the speakerphone is active, the keys control the speaker and microphone volume.
- When the headset is active, the keys control the headset's volume.

2.3.5 Muting a Call

When you mute a call on the V500 you can hear the incoming signal (the sound from the other end of the line) but you do not transmit a signal (the person on the other end of the line cannot hear you). It does not matter whether you are using the handset, the internal speakerphone or an external headset.

Press the **MUTE** key once to mute a call. Press it a second time to return to the call.

2.3.6 Placing a Call on Hold

When you place a call on hold, you neither receive nor transmit a signal. If your phone system is configured to use the Music on Hold feature, the person on the other end of the line hears the preconfigured music (or other audio). Otherwise, they hear nothing.

Press the **HOLD** key once to place a call on hold. Press it a second time to return to the call. While a call is on hold, you can make a call on another line (press another line key) and then return to the call on hold.

2.3.7 Using Voicemail

Once you have configured your SIP account's voicemail number on the V500, you can press the **VOICEMAIL** key to check your messages.

You can set a voicemail number for each of the V500's SIP accounts. The account you check when you press the **VOICEMAIL** key depends on which SIP account is currently active.

Use the **Advanced Setting** > **SIP Configuration** > **SIP 1 ~ 4 Configuration** > **Voicemail Number** menu to set the voicemail account number. See Section 7.4.12 on page 143 for more information.

2.3.8 Making Conference Calls

Take the following steps to make a three-way conference call.

1. Either start a call, or receive a call. Make sure you know which line the call is using (the corresponding **Line** key lights up).
2. Ensure the call is active (you can talk with the other person). Press the **Conference** key. This "marks" the first call you want to mix into the conference call.
3. Press another **Line** key. You can either receive an incoming call, make another outgoing call, or resume an existing call that you previously put on hold.
4. Ensure the call is active and press the **Conference** key again. The three-way conference call begins. All three parties can talk with one another.

Note: Do not press any other keys between step 2 and step 3. If you do, you will have to start again.

Note: You cannot have a conference call and a transferred call ongoing at the same time.

Note: If the person who started the conference call leaves, the remaining parties can continue talking in the same conference.

2.3.9 Transferring a Call

Take the following steps to transfer an ongoing call to another phone number.

1. During the ongoing call, press the **Transfer** key.
2. The next available line automatically activates, and the corresponding **Line** key lights up. Ensure you can hear a dial tone.
3. Dial the number to which you want to transfer the call.
4. To transfer the call, either:
   - Wait until you hear the ringing tone, then simply put down the handset, press the **Speaker** key or the **Headset** key (depending on which you are using) to end the call. The call is transferred. This is known as a blind or unsupervised transfer.
   - Wait for the other person to answer, then press transfer key again to end the call. This is known as a consultant or supervised transfer, and allows you to ask the other person whether they want to receive the call or not.

2.3.10 Upgrading the Phone's Firmware

When it is time to upgrade your phone's firmware, your telephone network administrator will configure the IP PBX to which the V500 is connected to automatically check your phone's existing firmware and compare it to the firmware on an official ZyXEL server. If your firmware's version number does not match, the IP PBX will then initiate the upgrade process:

1. When the IP PBX is ready to process your phone, it rings you while the phone is on the hook. As soon as you answer, an automated message asks if you want to change your V500's firmware.
2. Enter *** 9 9 #** on the V500's keypad to answer 'Yes'.

   Enter **# 9 9 #** on the V500's keypad to answer 'No'.
3. If you entered 'Yes', then the phone begins downloading the new firmware from the IP PBX. The download and install process may take some time, depending on the size of the update and any network congestion.
4. When the download and install process completes, the V500 restarts. You may need to log into your account again.

Note: Do not turn off or attempt to use your V500 during a firmware update.

3

Tutorials

3.1 Overview

These tutorials show you how to perform numerous functions of the V500. Even though they make certain basic assumptions that may not match your actual configuration environment, the foundation provided here should be sufficient to get you up and running as quickly as possible.

Note: For complete information on how to work with the LCD menu screens, see Chapter 4 on page 63.

To get your V500 operational, you must:

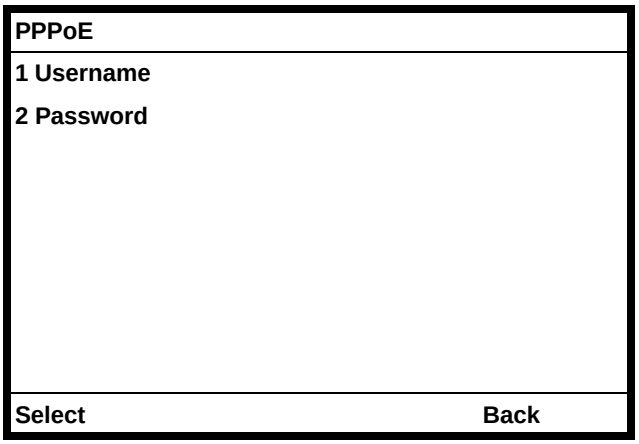
- Set up a network connection (Section 3.2 on page 46)
- Set up a connection to your VoIP service provider (Section 3.3 on page 48)

3.2 Setting Up a Network Connection

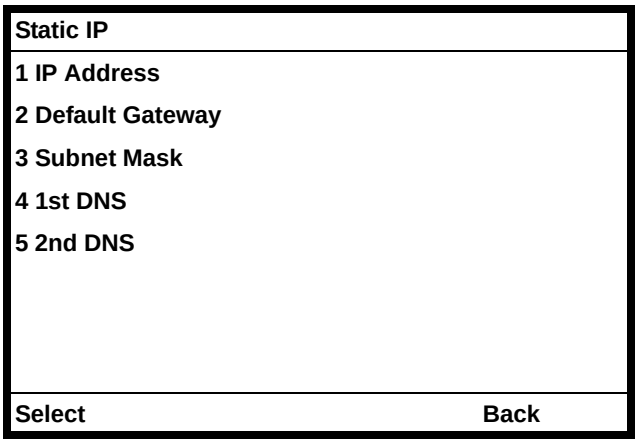
The V500 is an IP phone. As such, you need to have an active network connection for it to work. This allows it to connect to a voice server.

To establish a network connection:

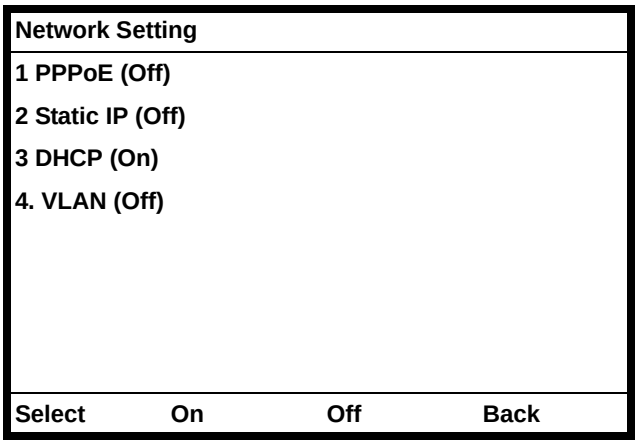
1 **For PPPoE:** Open the **MENU > Advanced > Network Setting** screen, highlight the **PPPoE (Off)** option and press **Select**. Configure your PPPoE **Username** and **Password**.



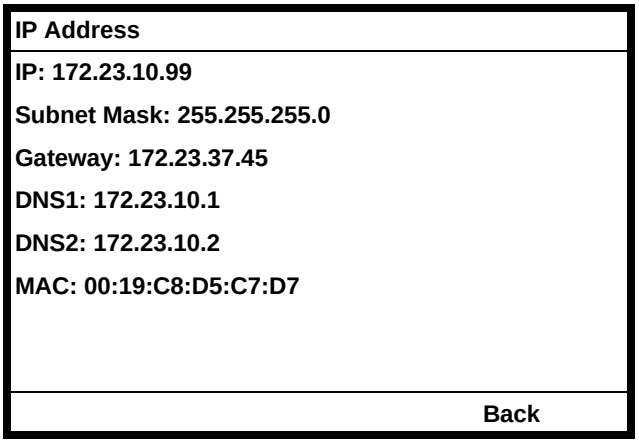
2 **For Static IP:** Open the **MENU > Advanced > Network Setting** screen, select the **Static IP (Off)** option and press **Select**. Configure your static IP settings.



3 **For DHCP:** Open the **MENU > Advanced > Network Setting** screen, select the **DHCP (Off)** menu option and set it to **On**.



4 **All:** Once you have configured all the appropriate network settings on your V500, open the **MENU > System Info** screen to confirm your IP address.



If you have a valid connection, all the displayed fields will contain information provided by the server. If not, the fields will remain blank.

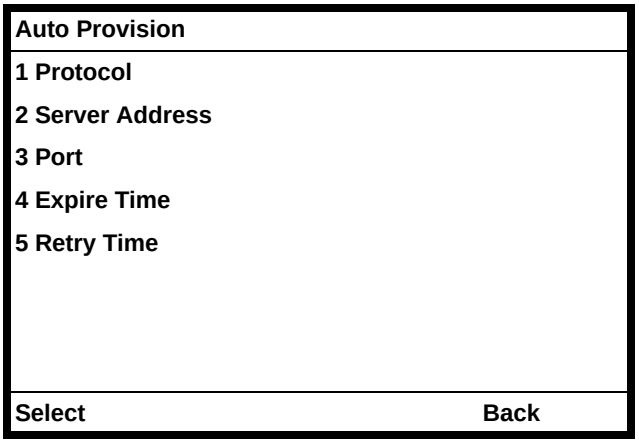
3.3 Configuring VoIP Options Automatically

Once you have established a network connection, the next thing you must do is configure the V500 so that it can connect to a voice server. If your voice server uses auto provisioning, then that server can automatically upload all the required VoIP configuration data directly to your phone; all that is required on your end is entering the correct information as provided by your network administrator or service provider.

To configure your phone automatically:

1 Open the **MENU > Advanced > Auto Provision** screen. (You may be prompted to enter the administrator password. The default is “1234”.)

2 Set up the appropriate options for your auto provisioning server. (These settings should be provided by your network administrator or service provider.)



3 Your phone should momentarily update itself with its new VoIP settings.

3.3.1 Configuring VoIP Options Manually

If your phone network does not use or support automatic configuration through auto provisioning, then you must configure the V500's voice server settings yourself.

The essential settings you need to establish a VoIP connection are:

SETTING	TUTORIAL VALUE	NOTES
Display Name	Michael	This is your name as it will appear on the V500's LCD screen and which is associated with this phone extension and SIP server information. Other users receiving calls placed by you may also see this name on their own devices, depending on your particular SIP server.
SIP Number	1001	This is your IP phone number or extension. Not all network admins or service providers necessarily use the same term for it; for example, some admins may instead call it the VoIP number.
SIP Server Address	172.23.10.10	This is the IP address of the SIP server that the V500 uses to communicate with other phones and devices.
SIP Register Server	172.23.10.10	This is the service registration server's IP address. Usually, this value is identical to the SIP Server Address. Even though it is the same, it is still required.
SIP Authentication ID	mscott	This is the SIP login ID that is associated with this phone. It must provided for authentication.
SIP Authentication Password	Customization 1234	This is the SIP login password that is associated with this phone. It must provided for authentication.

To configure your VoIP settings:

1 Open the **MENU > Advanced > SIP Configuration** screen and select one of four available account slots. (You may be prompted to enter the administrator password. The default is “1234”.)

SIP Configuration			
1 VoIP 1 Config. (On)			
2 VoIP 2 Config. (Off)			
3 VoIP 3 Config. (Off)			
4 VoIP 4 Config. (Off)			
Select	On	Off	Back

2 The screen changes to display the **SIP Configuration** menu. Enter the values provided for the following settings: **Display Name**, **SIP Numbe**r, **SIP Server Addr**, **SIP Register Server**, **SIP Auth ID** and **Auth Password**.

SIP 1 Configuration			
1 Display Name			
2 SIP Number			
3 SIP Local Port			
4 SIP Server Addr			
5 SIP Server Port			
6 SIP Register Server			
7 SIP Register Port			
8 SIP Service Domain			
9 SIP Auth ID			
10 Auth Pasword			
Select			Back

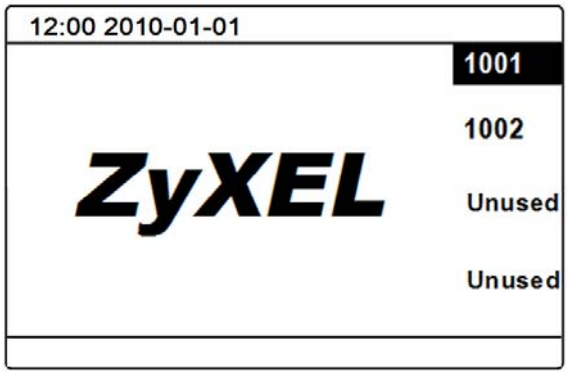
Note: By default, the **SIP Local Port** and **SIP Register Port** should already be set to 5060. You may need to change this depending on your network configuration, but only change it if your network administrator requires it.

3.4 Placing a Call

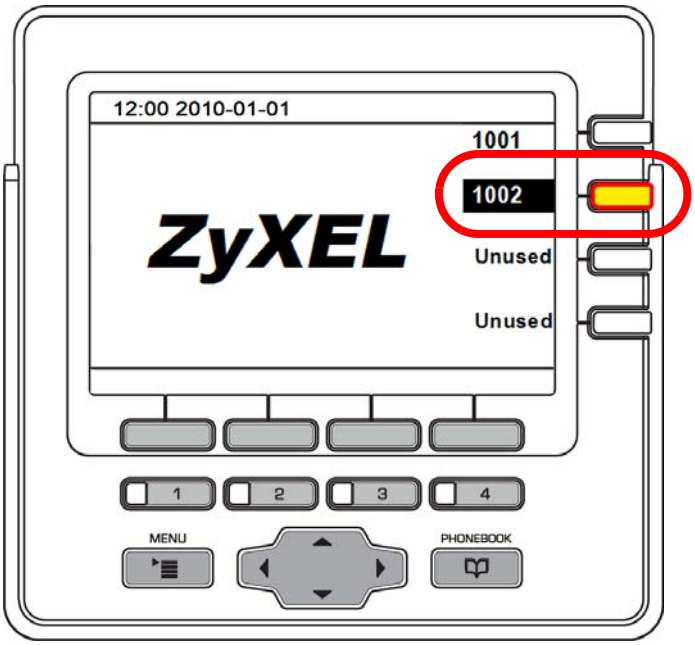
Placing a phone call on your V500 is as easy as with any other phone, although you have a greater variety of options available to you with this one. First and foremost you can have up to 4 separate phone lines with their own VoIP numbers all on the same unit so choosing which line to use may seem like a daunting task (it's not, but if this is your first experience with the V500 it is easy to understand how it could be).

To place a call with the V500:

1 Ensure that your phone is already set up properly. If it is, your phone number appears on the right hand side of the LCD screen. If you have multiple VoIP accounts configured for your V500, then the currently selected account is highlighted by a black bar.



2 Press the **Account Key** that corresponds to the phone number you want to use to dial out. If you only have one VoIP account set up then you can skip this step as that account is always chosen automatically by default.



3 The speaker activates, presenting you with a dial tone. Simply enter the number of the phone you want to call and talk into the microphone. If you need privacy, you can lift the handset at any time to talk directly into it.

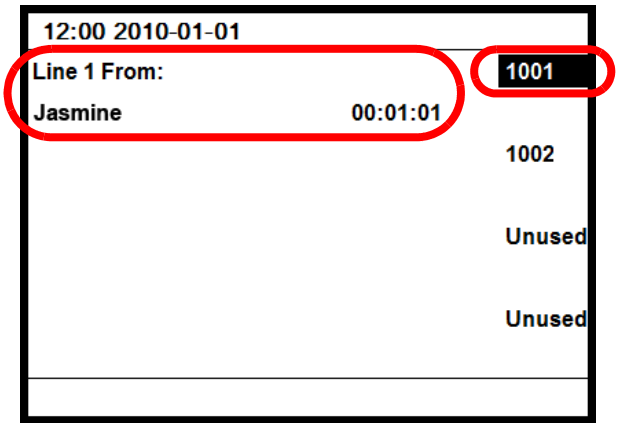
3.4.1 Receiving an Incoming Call on a 2nd Line

Now that you know how to place calls, we're going to show you how to retrieve an incoming call on a second VoIP number if you're already talking on a first one. For example, let's say you're talking to Jasmine on **Line 1** (using VoIP account '1001', from our previous examples) and Sebastian calls in on **Line 2** (or VoIP account '1002').

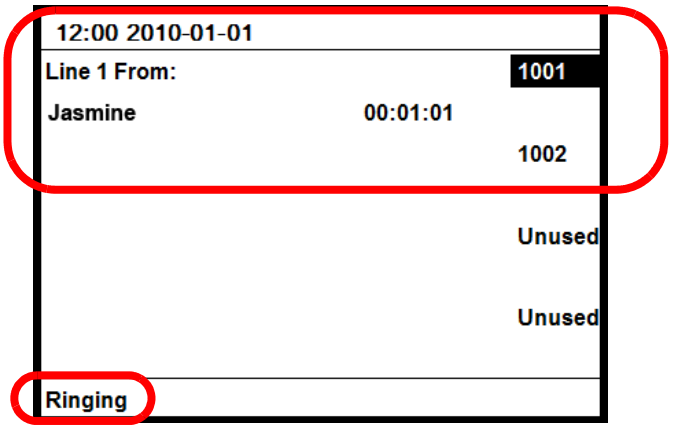
To recieve an incoming call on a different line:

1 While talking on **Line 1**, your LCD menu screen shows your current call status.

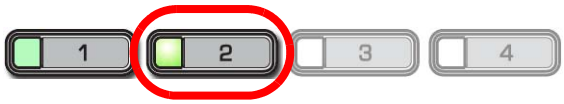
Here, **Line 1 From** indicates you're currently talking to the Jasmine.



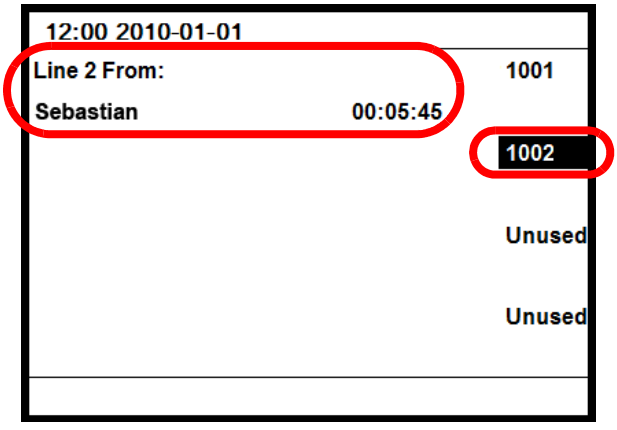
2 When a new call comes in on a different line while you're in the middle of the first call, the V500 notifies you on screen by displaying **Ringing** in the lower right corner.



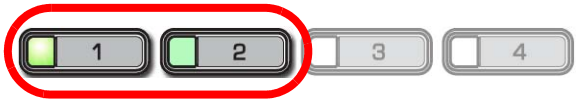
The first available **Line** key also starts blinking; in this case, it is **Line 2** because **Line 1** is already being used to speak with Jasmine.



3 Press the **Line** key of the incoming call to answer it. Here, it is **Line 2**. The V500 LCD screen changes to indicate your selection and the call for **Line 2** becomes active.



The **Line 1** key flashes to indicate a call on hold while the **Line 2** key shines a steady green to indicate is currently in use.



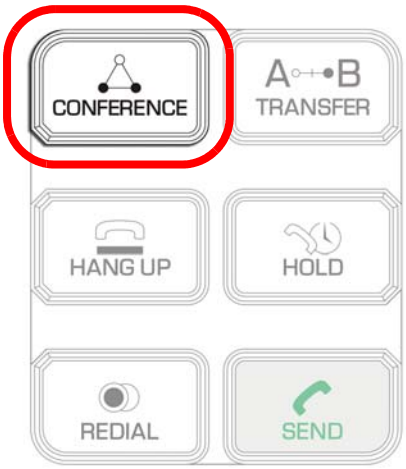
3.5 Making a Conference Call

A conference call consists of three connected phones (including yours) participating in the same conversion simultaneously.

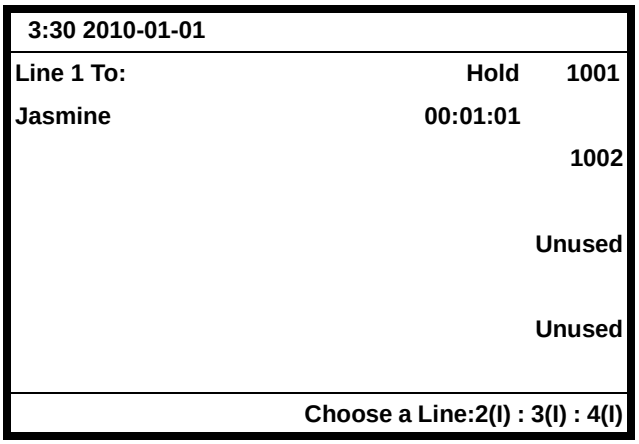
To make a conference call:

1 Dial the number of the first person in your conference call.

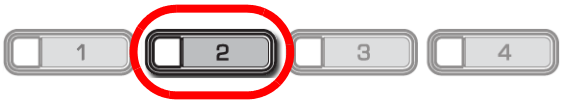
2 When your party answers, press the **CONFERENCE** button.



3 The V500 puts the first party on hold and prompts you to select a line number.



Use the **Line Number** keys beneath the V500's LCD to make your line selection. Since **Line 1** is currently connected to Jasmine, select **Line 2** as it is free.

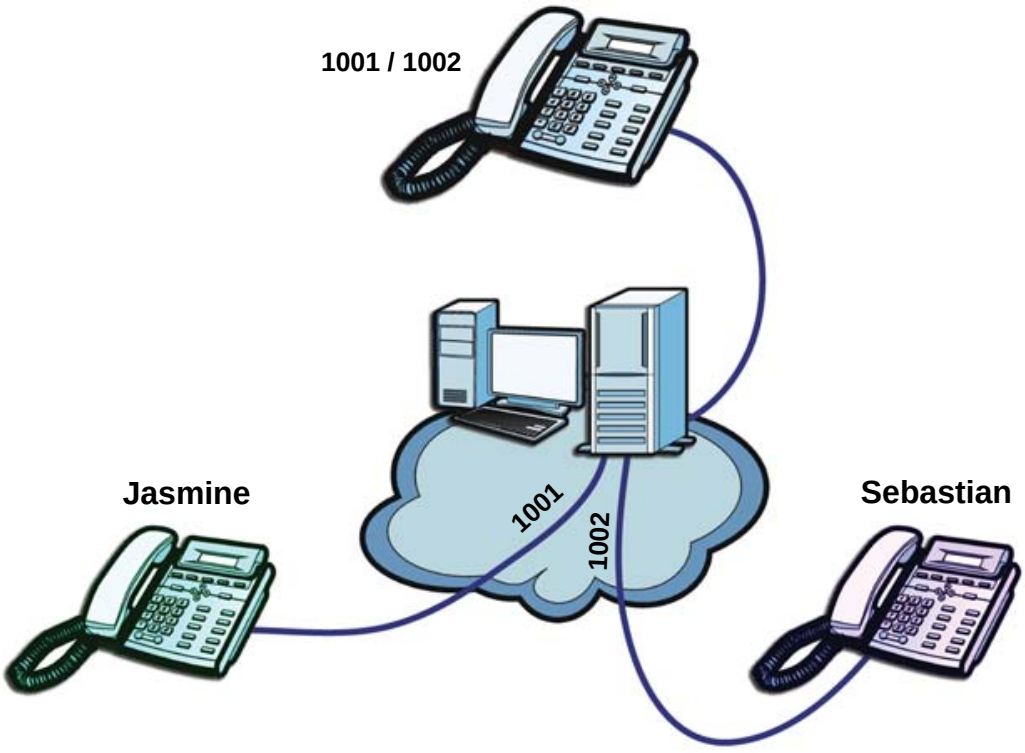


4 Next, dial the third party's number.

5 When they answer, press the the **CONFERENCE** button again to begin the three way conference call. Your V500 LCD screen should look similar to this:

3:30 2010-01-01		
Line 1 To:		**1001**
Jasmine	**00:03:10**	
Line 2 To:		**1002**
Sebastian	**00:02:34**	
		Unused
		Unused

The end result is that the call to Jasmine goes out on **Line 1** (or number 1001) while the call to Sebastian goes out on **Line 2** (or number 1002). Both calls are routed through the voice server and both calls are connected simultaneously. In other words, all three parties can communicate with one another at the same time. .



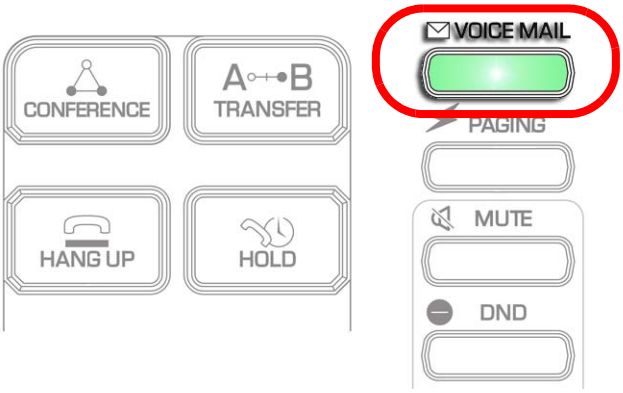
3.6 Retrieving Voice Mail

When you dial a number and the person at the other end does not pick up, you are prompted to leave a voice mail or dial another extension. This tutorial shows you how to listen to any voice mail messages that you might have received.

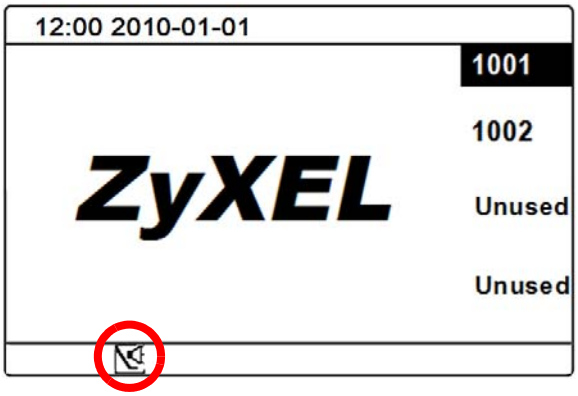
To retrieve a voice mail message:

1 When you have a new voice mail message waiting, three indicators notify you:

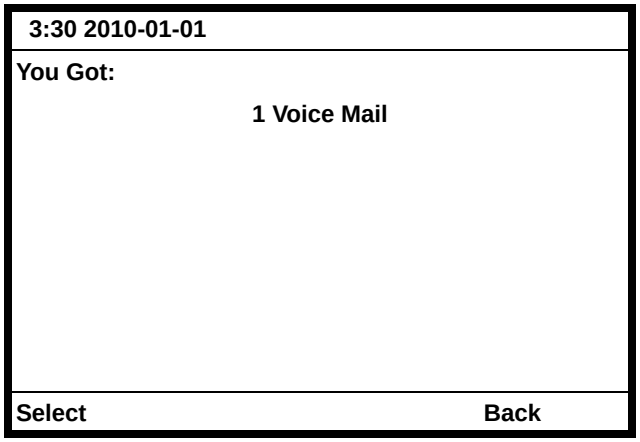
- As soon as a voice mail is recorded the LED **VOICE MAIL** button starts to flash green. This happens at the same time as the other notifications, described below.



- A small voice mail icon appears in the **Main** screen above **Soft Key** number 2.

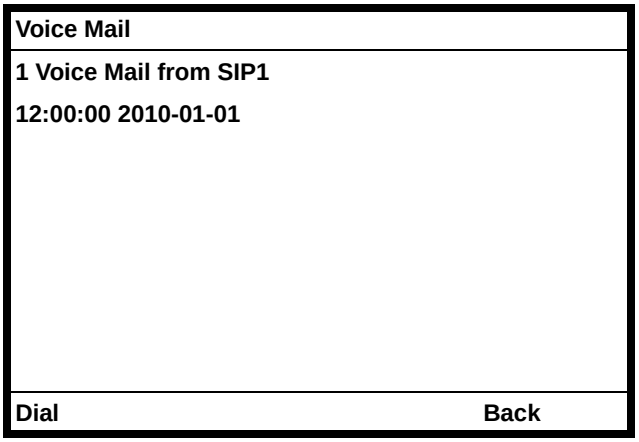


- A moment later, the **Main** screen displays the **Voice Mail Notification** screen:



2 To retrieve your voice mail messages, press the LED **VOICE MAIL** button. This takes you directly to the audio prompt. Simply follow the instructions as they are presented to you.

3 Alternatively, you can press **Soft Key 2**, which corresponds to the voice mail icon that appears in the **Main** screen; or you can press **Select** in the **Voice Mail Notification** screen if that is displays instead. The **Voice Mail List** screen appears:



4 When the **Voice Mail List** appears, select the voice mail item from the list, then press **Dial** to retrieve the selected voice mail.

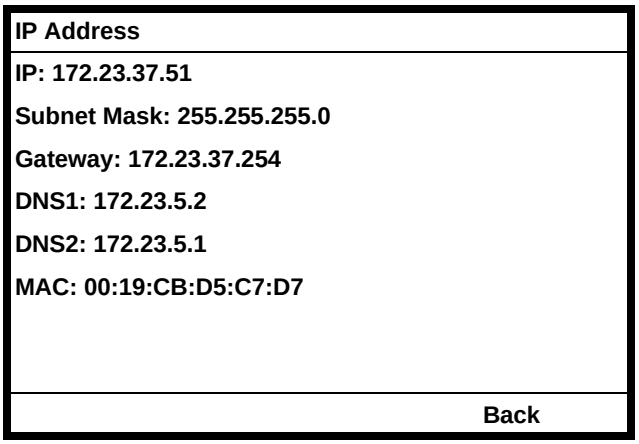
Note: When you access your voice mail, you may be required to enter your unique PIN code. It should have been given to you by the network administrator at the time your phone account was created.

3.7 Setting the Time on Your V500

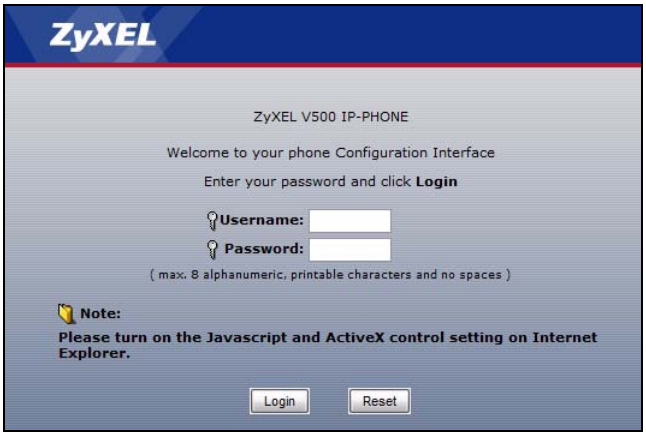
By default, your phone's time is set automatically using an external time server. However, you can set the time manually as well. This tutorial takes you directly to the V500's operating system: the Web Configurator.

To set the time on your V500:

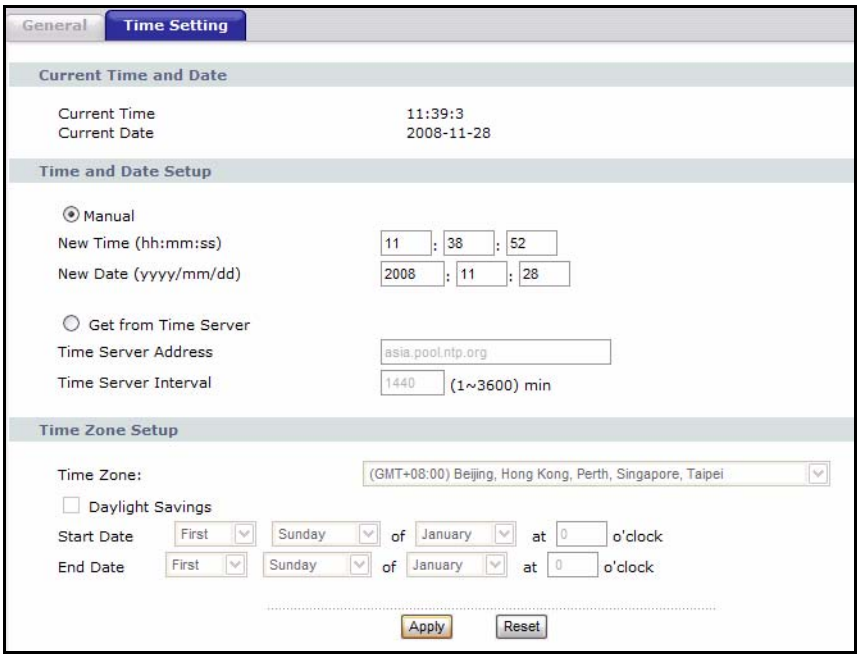
1 First, we need to get your phone's IP address. Using the LCD menu system, open the **MENU > System Info > IP Address** screen and note the **IP**. For example:



2 Next, open your web browser and navigate to that IP address. The **Web Configurator** opens displaying the login page.



3 Open the **Maintenance > System > Time Setting** screen, and configure your V500's time settings as you see fit.



PART II
Technical Reference

4

Using the LCD Screen

4.1 Overview

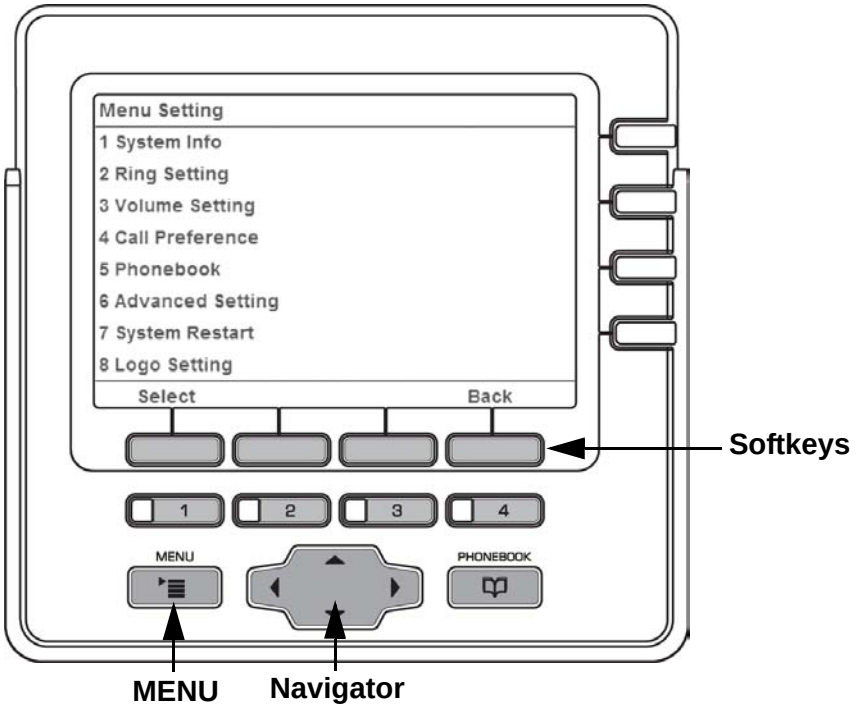
This chapter shows how to use and configure the V500 by means of the LCD screen menu system.

Note: For a complete overview of the V500's navigation and keypad buttons, please refer to Section 1 of the Quick Start Guide.

4.2 The Navigation Pad

The V500's navigation pad allows you to open the LCD menus and make menu selections. There are three major components to it: the **Softkeys**, the **MENU** button, and the **Navigator**, all shown in the image below.

Figure 7 The V500 LCD Screen and Navigation Pad



The following table describes the navigation pad features.

FEATURE	DESCRIPTION
Softkeys	These keys' functions depend on the screen currently displayed on the LCD screen. A word or symbol displayed on the LCD screen above a softkey shows its current function.
Menu	Press this to display the V500's configuration menu. Press it again to exit the menu. The menu is not accessible when a call is in progress.
Navigator	Press these keys to move around the V500's screens. Press ▲ to go up one line in a menu, and press ▼ to go down one line. Press ▶ to move one space to the right, and press ◀ to move one space to the left. You can also press ▶ to make a menu selection, and press ◀ to return to the previous menu.

4.3 The Keypad

The keypad is also a very important part of working with the V500's LCD screens. It allows you to make selections based on list postion (for example, pressing the **1** key to select item number 1 in the menu) and enter important information into the fields that require it (such as your user name and password).

Figure 8 The V500 Keypad

The following table describes the keypad features.

FEATURE	DESCRIPTION
Alphanumeric keypad	Use these to enter numbers, letters and symbols. Use the # key to switch between Number mode, Uppercase mode, Lowercase mode and Symbol mode. Enter a menu item's number to jump to that item (single-digit numbers only).

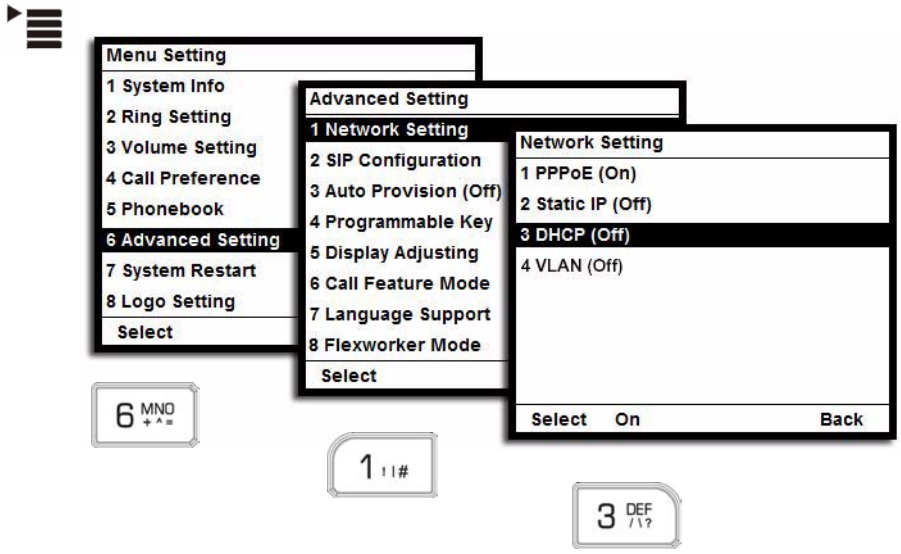
4.4 Working with the LCD Menus

Once you are familiar with the navigation and keypads, it is actually quite easy to move about within the LCD menu system. As described in previous sections, the navigation pad gives you the freedom to open menus and make menu selections while the keypad allows you to configure the specific features that require your direct input.

For example, to activate your V500's DHCP setting, you would:

1. Press the **MENU** key to open the **Menu Setting** screen.
2. Press **6** on your phone's keypad to open the **Advanced Setting** menu.

   If you use the navigator to highlight option 6 instead, then you must press **Select** to actually open the menu.
3. Press **1** to open the **Network Setting** menu.
4. Press **3** to select the **DHCP** option, and then press **On** or **Off** to toggle it.



4.4.1 LCD Menu Syntax Conventions

Throughout this manual, whenever a menu item is designated for configuration the option is listed in the following format: MENU > Path > Option.

For instance, to set the DHCP status of your phone (continuing with the example from the previous section) the menu item for the configuration option would be displayed as:

MENU > Advanced Setting > Network Setting > DHCP (Off).

4.4.2 Entering Numbers, Letters and Symbols

When you enter information into the V500 (when setting up a phonebook entry, for example) you may need to enter different kinds of characters. The alphanumeric keypad has four input modes:

- **Number mode**
- **Uppercase mode**
- **Lowercase mode**
- **Symbol mode**

Use the **#** key to cycle between modes.

Note: Not all modes are available in all screens.

When you press a key to enter a character, wait a short time until the cursor moves on to the next space. Press a key multiple times to access the different characters. For example, in **Uppercase mode** press **9** four times to enter "**Z**".

The following table shows the numbers, letters and symbols you can enter.

Table 5 Keypad Characters

		MODE			
		Number	Uppercase	Lowercase	Symbol
KEY	1	1	[NONE]	[NONE]	! | #
	2	2	A B C	a b c	: ; "
	3	3	D E F	d e f	/ \ ?
	4	4	G H I	g h i	@ % &
	5	5	J K L	j k l	. ' ,
	6	6	M N O	m n o	+ ^ =
	7	7	P Q R S	p q r s	~ - _
	8	8	T U V	t u v	( )
	9	9	W X Y Z	w x y z	< >
	*	.	.	.	$ *
	0	0	[NONE]	[NONE]	[SPACE]
	#	[CYCLE MODE]			

4.5 Enabling and Disabling Features

Some of the features on the V500 must be enabled before they can be used or, in some cases, configured. These features display on the LCD screen with **(On)** or **(Off)** next to their names, indicating their current status.

When you need to enable a feature, this is indicated in the text. For example "Enable and select **Advanced Setting** > **Auto Provision**" means to do the following:

1. Press the **MENU** key to enter the menu system.
2. Select **Advanced Setting**.
3. Use the navigator to highlight **Auto Provision (Off)**.
4. Press the **On** softkey.
5. Press the **Select** softkey.

Note: You can enable and disable a sub-feature only when you first enable the feature. For example, you can enable or disable specific call forwarding only when you first enable call forwarding.

4.6 LCD Menu Overview

This section shows the LCD menus, and describes what you can do with each.

Press the **MENU** key to access the V500's LCD menu system.

Table 6 LCD Menu Overview

MENU		DESCRIPTION
System Info	Firmware Version	Use this to see the version number of the firmware the V500 is currently using.
	IP Address	Use this to see the IP address, subnet mask, gateway, DNS settings currently assigned to the V500, as well as the V500's Media Access Control (MAC) address.
	VOIP Status	Use these to see the SIP number used by each SIP account (1 ~4), and to check whether each account is registered with a SIP server.

Table 6 LCD Menu Overview (continued)

MENU			DESCRIPTION
Ring Setting	Default / Family / Business / Friend / Others		Use these menus to set the V500 to ring differently when an incoming call is from a member of a group you set up in the **Phonebook** > **Group** menu.
Volume Setting	Speaker Volume		Use this menu to set the loudness of the internal speaker.
	Phone Volume		Use this menu to set the loudness of the V500's handset.
	Ring Volume		Use this menu to set the loudness of the V500's ringtone.
	Headset Volume		Use this menu to set the loudness of an external headset you plug into the V500.
Call Preference	Receive Anonymous Call		Use this to allow or prohibit incoming calls that do not carry caller ID information.
	Call Forward	Unconditional Forward	Use this to forward all calls. When this is activated, **Conditional Forward** is deactivated
		Conditional Forward	Use this menu to set the conditions under which calls are forwarded. When this is activated, **Unconditional Forward** is deactivated.
		Forward Number	Use this to set up the phone number to which calls are forwarded.
		Specific Forward	Use this menu to forward certain specific incoming calls to different phone numbers.
Phonebook	Contact List		Use this menu to view, add, edit or delete details of your contacts.
	Group	Default / Family / Business / Friend / Others	Use these menus to see which of your contacts belong to each group.
	Block List		Use this to see which phone numbers are prevented from calling you.
	DND White List		Use this to see which of your contacts are still able to call you when you have DND (Do Not Disturb) turned on.
	Speed Dial		Use this to set up one-touch calling for phone numbers you call often.

Table 6 LCD Menu Overview (continued)

MENU			DESCRIPTION
Advanced Setting	Network Setting	PPPoE	Use this menu to configure your PPPoE username and password, if provided by your Internet Service Provider or network administrator.
		Static IP	Use this menu to give your V500 an IP address.
		DHCP	Use this menu to have the V500 get an IP address automatically.
		VLAN	Use this menu to configure the V500's voice VLAN ID and priority.
	SIP Configuration	VoIP 1 ~ 4 Configuration	Use these screens to set up your V500 to use your Voice over Internet (VoIP) account. You can configure up to four accounts.
	Auto Provision		Use this to have your V500 get its settings from an auto-configuration server. You must know the server's IP address.
	Programmable Key		Use this to set up the V500's custom keys.
	Display Adjusting	Contrast	Use this to change the contrast of the V500's LCD screen.
		Brightness	Use this to change the brightness of the V500's LCD screen.
	Call Feature Table		Use this table to configure IP-PBX-specific settings if your PBX does not use auto-provisioning to configure them for you.
	Language Support		Use this menu to configure which language the V500 LCD menus utilize.
	Flexworker		Use this menu to "carry" your V500 settings with you when you change locations but are still using a compatible V500 phone.
	Clock Alarm Setting		Use this menu to configure the V500's three built-in alarm clocks.
	ACD Mode		Use this menu to turn on and off the V500's ACD feature.
	NTP Setting	Time Server Address	Use this to enter the IP address (up to 20 characters in length) of your time server. For example, asia.pool.ntp.org. Check with your ISP/network administrator if you are unsure of this information.
		Time Zone	Use this to choose the time zone of your location.
		Time Interval	Use this to enter the duration (in minutes) synchronizing with the timer server.
	Date Format		Use this to select the date format that shows on the LCD.

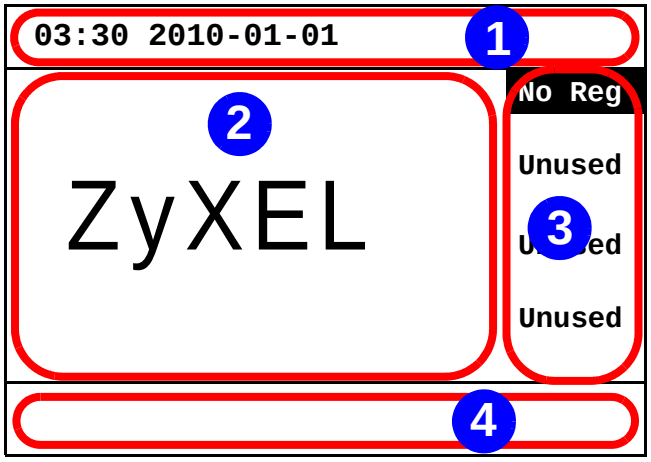
Table 6 LCD Menu Overview (continued)

MENU	DESCRIPTION
System Restart	Use this to restart the V500. Using this feature does NOT return the V500 to its factory defaults.
Logo Setting	Use this to define the corporate logo that appears on the V500's at-rest screen.

4.7 The LCD Status Screen

When you first turn on the V500 or make a call, the status screen displays. The status screen is divided into four main sections, as shown below.

Figure 9 LCD Status Screen



The following table describes the labels in this figure.

Table 7 LCD Status Screen

LABEL	DESCRIPTION
1	**Time and Date Section** This section shows the current time and date configured on the V500.
2	**Calling Section** This section shows information about the current active call.

Table 7 LCD Status Screen

LABEL	DESCRIPTION
3	**SIP Account Tabs** These tabs show which of the four configurable SIP accounts is currently active. When an account is activated but has not registered, a tab displays **No Reg**. When a SIP account is registered, its name displays in the tab. Use the **Advanced Setting** > **SIP Configuration** menus to register a SIP account.
4	**Message Bar** This section displays messages and suggestions, for example “Please Dial” when a line is activated. It also displays the current function of the softkeys below.

5

The Phonebook

5.1 Overview

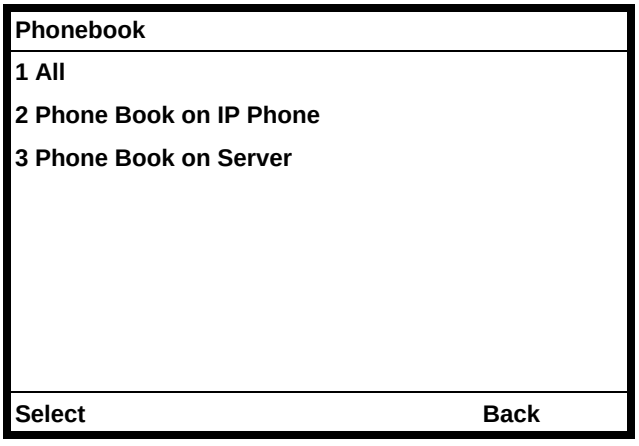
Use the V500's phonebook to store the names and phone numbers of your contacts. You can either add phonebook entries yourself (up to 200), or they can be supplied via auto provisioning (up to 1000). The following sections describe how to add, edit, delete and use phonebook entries.

5.2 Add a Phonebook Entry

Take the following steps to add a contact's entry to the V500's phonebook.

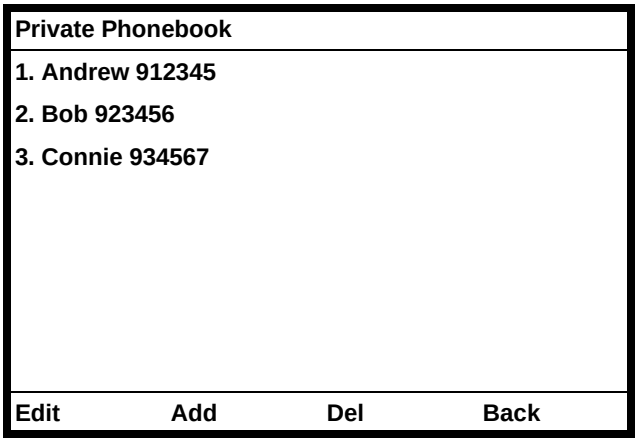
1 Press the **PHONEBOOK** key. The **Contact List** screen appears.

2 If your V500 uses an auto-provisioning server, the following screen displays. Otherwise, the **Contact List** screen displays (see step 3).



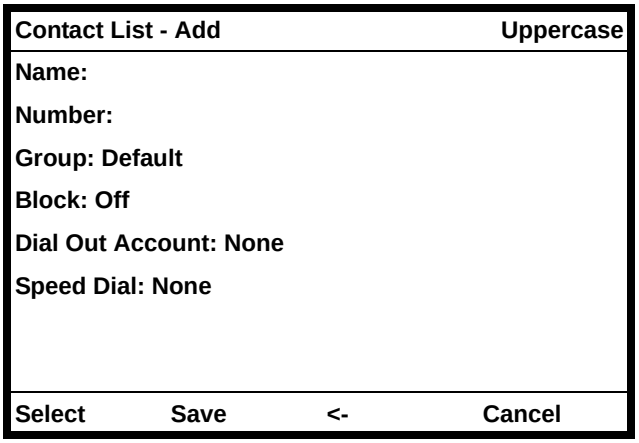
The **Server** phonebook contains contact details from the auto-provisioning server. You cannot add to or edit these. The **IP Phone** phonebook contains contact details stored on the V500. Select **Phone Book on IP Phone**.

3 The **Contact List** screen displays.



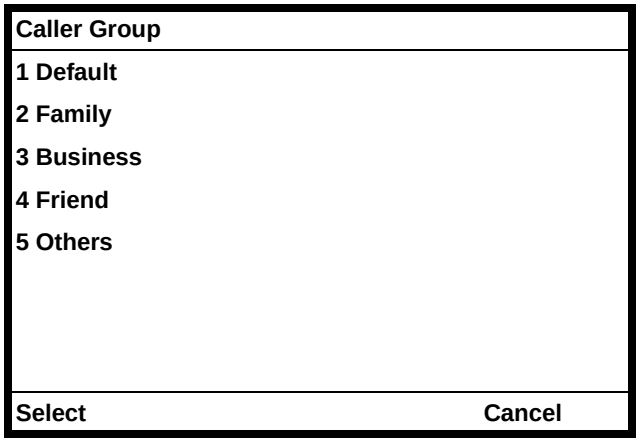
Note: You can also access the **Contact List** screen by pressing the **MENU** key and selecting **Phonebook** > **Contact List**.

4 Press **Add**. The **Contact List - Add** screen appears.

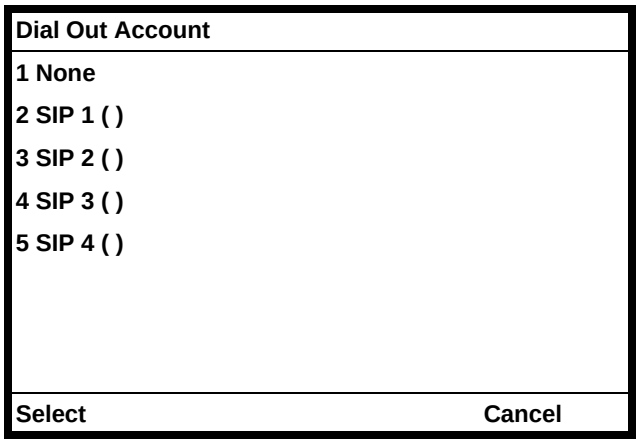


- Enter your contact's name in the **Name** field. This **Name** displays when you use the phonebook to call the contact.
- Enter your contact's phone number in the **Number** field. When you call the contact, the V500 calls this number exactly as you enter it here.

- If you want to add this contact to a caller group select **Group**. The **Caller Group** screen displays.

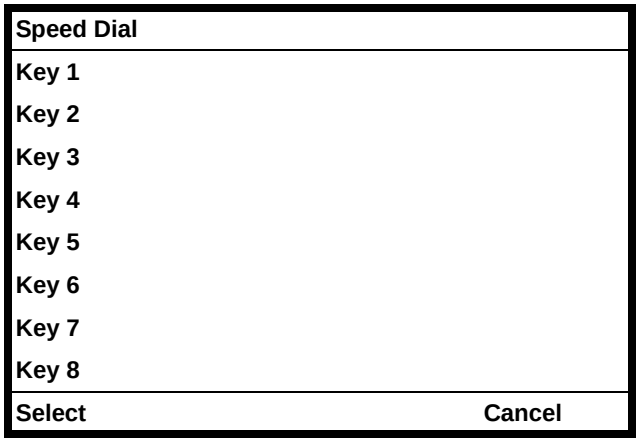


- Select the group to which you want to add this contact. When the contact calls you, the V500 uses the ring tone you configure in the **Ring Setting** menu.
- If you want to stop your phone from ringing when this contact calls you, select **Block**.
- If you want to always use a certain SIP account to call this contact, select **Dial Out Account**. The **Dial Out Account** screen appears.



Select the SIP account you want to use. If you select **None** the V500 uses whichever SIP account is currently active when you call this number.

- If you want to use speed dial to call this number, select **Speed Dial**. The **Speed Dial** screen appears.



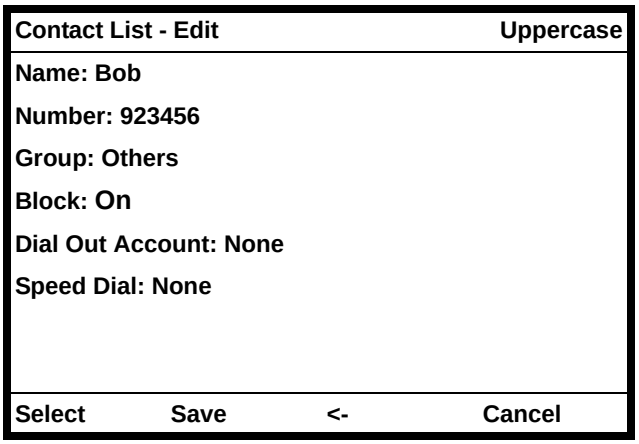
  Select the numeric keypad key you want to use for this contact from the list, and press **Select**.

5 In the **Contact List - Add** screen, press **Save**. If you entered a name, the contact's entry is stored alphabetically in the phonebook. If you did not enter a name, the contact is stored numerically.

5.3 Edit a Phonebook Entry

Take the following steps to change the details of a contact you already entered into the V500's phonebook.

1 Press the **PHONEBOOK** key. The **Contact List** screen displays.
Scroll down to the entry you want to change. Press **Edit**. The **Contact List - Edit** screen displays.

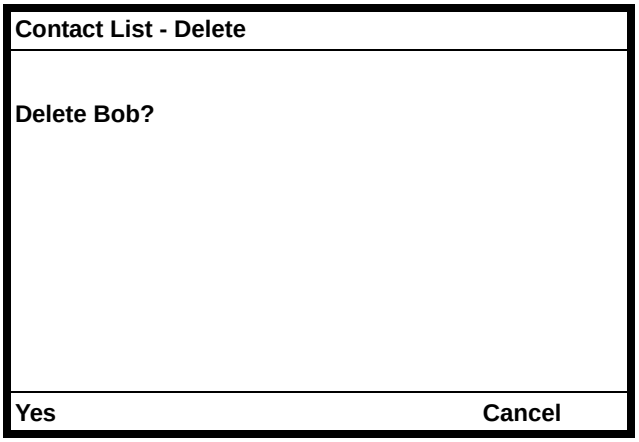


2 Scroll to the field you want to edit. If you want to change the **Group** or **Assign Account** settings, or to toggle the **Block** field on or off, press **Select**. Press **Save** when you have finished editing the entry.

5.4 Delete a Phonebook Entry

Take the following steps to remove a contact's entry from the phonebook.

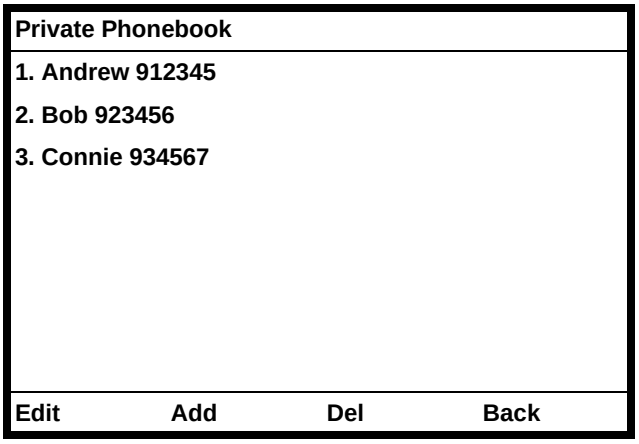
1 Press the **PHONEBOOK** key. The **Contact List** screen displays.
Scroll down to the entry. Press **Delete**. The **Contact List - Delete** screen displays.



2 Press **Yes** to delete the entry, or press **Cancel** to return to the previous screen.

5.5 Call a Phonebook Contact

In order to call a number you previously entered into the V500's phonebook, press the **PHONEBOOK** key and choose an available phonebook (such as Private).



Select a number from the list, then press either the **SEND** or **#** button. The number is sent to the currently active line and dialed automatically.

5.5.1 Search by Name

Take the following steps to search the phonebook by name.

1. Press the **PHONEBOOK** key. The **Contact List** screen appears.
2. Either scroll up and down using the navigator to select an entry, or use the alphanumeric keypad to enter the first letter of a contact's name. For example, press the **2** key three times to enter a "C". The cursor jumps to the first entry starting with that letter (if no entry starting with that letter exists, nothing happens).

   Note: The numbers that display to the left of a contact's name in this screen are index numbers only - you cannot use them to select an entry to call.

5.6 Calling a Number Not in the Phonebook

When you want to call a number that is not in your V500's phonebook, activate a line, dial the number as usual and press the **SEND** key to start the call.

6

LCD Menus: Basic Settings

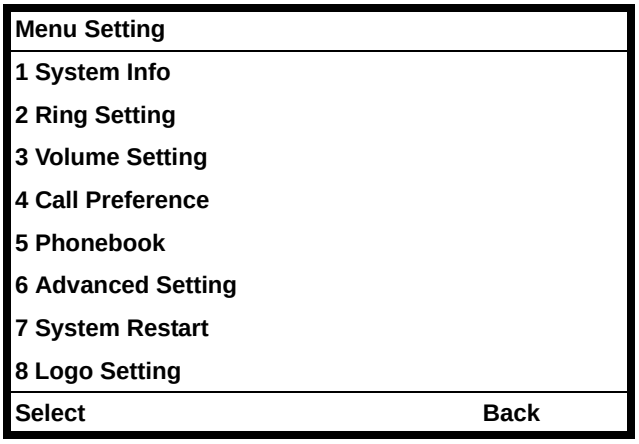
6.1 Overview

This chapter discusses how to set up your V500 using the internal configuration menus.

6.2 Entering the Menu System

Press the **MENU** key on the V500's front panel to enter the menu system. The **Menu Setting** screen displays as shown below.

Figure 10 LCD Menu Setting

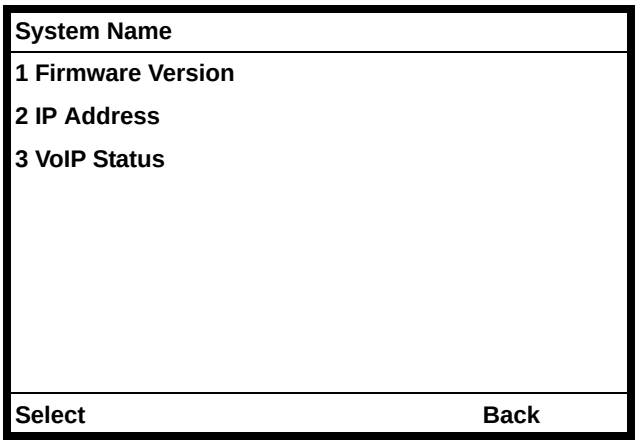


See the rest of this chapter for details on configuring each menu. For background information, see the relevant chapter in the web configurator section of this User's Guide.

6.3 The System Info Menu

The System Info menu allows you to quickly check some of your V500's settings. These settings are read-only. Press **MENU** > **System Info**. The following screen displays.

Figure 11 LCD Menu: System Info



The following table describes the labels in this screen.

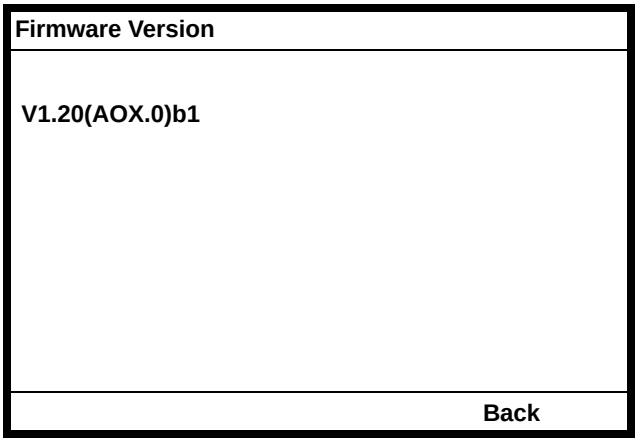
Table 8 LCD Menu: System Info

LABEL	DESCRIPTION
Firmware Version	Select this to see the current firmware version the V500 is using.
IP Address	Select this to see the IP address and DNS (Domain Name Server) settings of your V500. You can change these settings in the **Advanced Setting** > **Network Setting** menu. You can also see the MAC (Media Access Control) address of your V500. Every network device has a unique MAC address that identifies it.
VoIP Status	Select this to see the SIP number and registration status of your configured SIP account(s). You can change VoIP settings in the **Advanced Setting** > **SIP Configuration** menu.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

6.3.1 Firmware Version

Use these menus to check your V500's firmware version. Select **Firmware Version** in the **System Info** menu. The following screen displays.

Figure 12 LCD Menu: Firmware Version

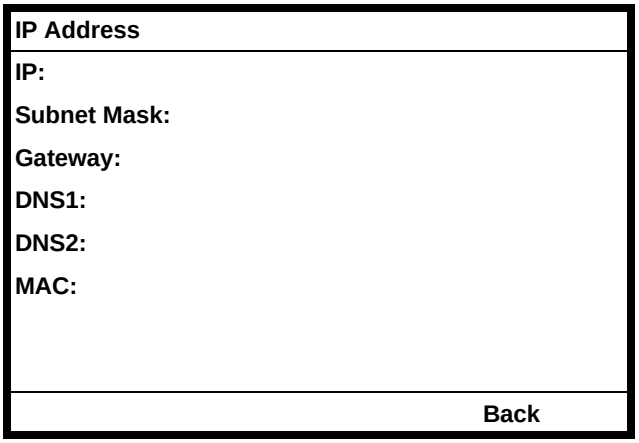


You can upload new firmware using the web configurator. Press **Back** to return to the previous menu.

6.3.2 IP Address

Use this menu to see information about the V500's current IP address, DNS and MAC address information. Select **IP Address** in the **System Info** screen. The following screen displays.

Figure 13 LCD Menu: IP Address



The following table describes the labels in this screen.

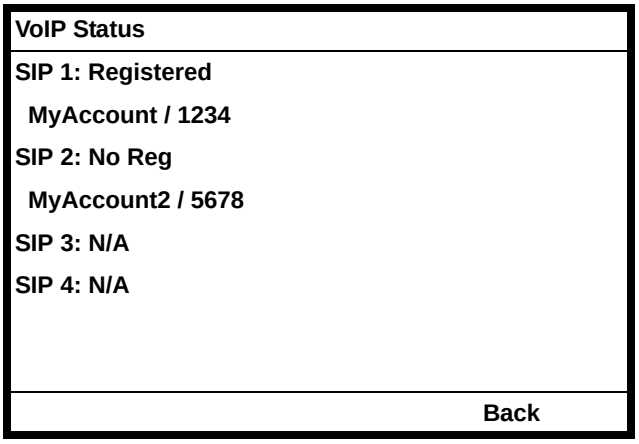
Table 9 LCD Menu: IP Address

LABEL	DESCRIPTION
IP Address	This is the IP address currently assigned to the V500.
IP Subnet Mask	This is the subnet mask currently configured on the V500.
Gateway	This is the IP address of the device on the network your V500 uses to access the Internet.
DNS1	This is the primary DNS (Domain Name System) server your V500 uses.
DNS2	This is the secondary (backup) DNS server your V500 uses.
MAC	This is your V500's Media Access Control Address.
Back	Press this to return to the previous screen.

6.3.3 VoIP Status

Use this screen to check the SIP number associated with each VoIP account configured on the V500, and to see whether an account is correctly registered with a SIP server. Select **VoIP Status** in the **System Info** menu. The following screen displays.

Figure 14 LCD Menu: VoIP Status



The following table describes the labels in this screen.

Table 10 LCD Menu: VoIP Status

LABEL	DESCRIPTION
SIP 1 ~ 4	These are the VoIP accounts configured on the V500. An account must be registered to make and receive calls, and must be active before the V500 tries to register it. • If an account is active and registered, **Registered** displays. The account name and number appear below. • If an account is active but has not registered, **No Reg** displays. The account name and number appear below. • If an account is not active, **N/A** displays.
Back	Press this to return to the previous screen.

6.4 The Ring Setting Menu

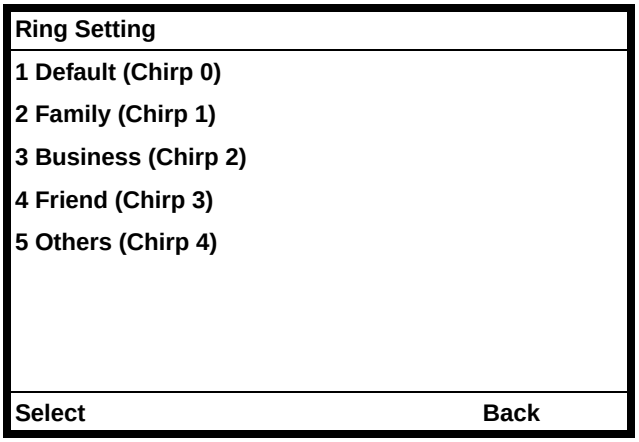
The **Ring Setting** menu allows you to set the V500 to ring differently when certain people call you. This depends on the group that the person's phonebook entry belongs to.

To have the V500 ring differently when someone calls you, you must do the following things:

- Set up a new phonebook entry (**Phonebook** > **Contact List** > **Add**) or **Edit** an existing entry.
- Set the contact to belong to a **Group** other than **Default** (**Friend**, for example).
- Use the **Ring Setting** menu to set up a different ringtone for the group.

Select **Ring Setting**. The following screen displays.

Figure 15 LCD Menu: Ring Setting



The following table describes the labels in this screen.

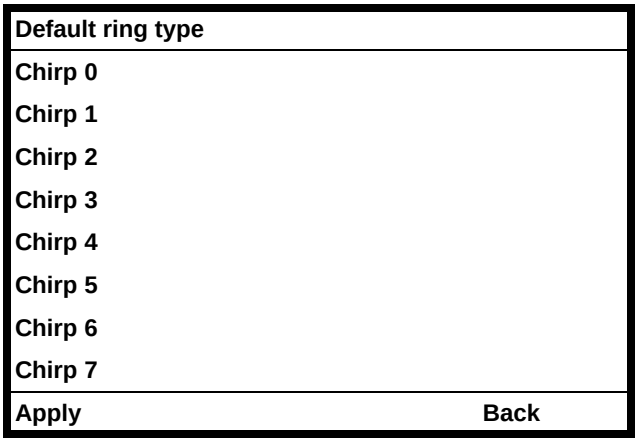
Table 11 LCD Menu: Ring Setting

LABEL	DESCRIPTION
Default	Select this to change the ringtone the V500 uses when an incoming call is not from a member of any group.
Family, Business, Friend, Others	Select this to change the ringtone the V500 uses when an incoming call is from a member of that group.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

6.4.1 The Ring Type Menu

Use this menu to audition and select ring tones for each call group. Select one of the options in the **Ring Setting** menu. The following screen displays (this example uses the **Others** group).

Figure 16 LCD Menu: Ring Type



The following table describes the labels in this screen.

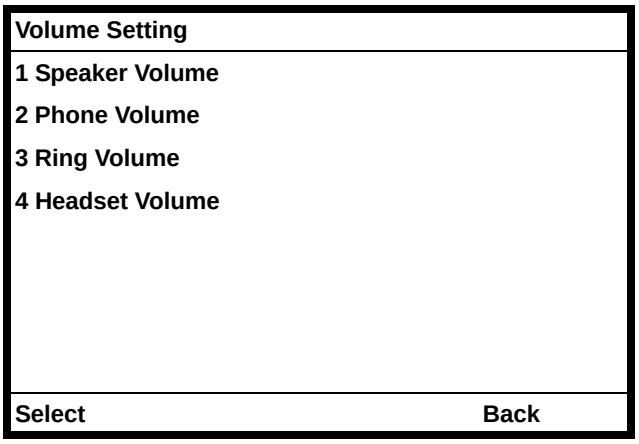
Table 12 LCD Menu: Ring Type

LABEL	DESCRIPTION
Chirp 0 ~ 12	Scroll up and down the list to highlight and audition each available ringtone.
Apply	Press this to save your changes.
Back	Press this to return to the previous screen without saving your changes.

6.5 The Volume Setting Menu

Use these menus to set the loudness of the V500's audio equipment.

Figure 17 LCD Menu: Volume Setting



The following table describes the labels in this screen.

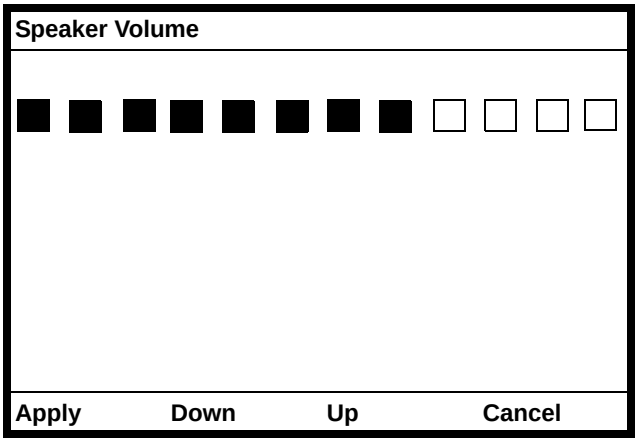
Table 13 LCD Menu: Volume Setting

LABEL	DESCRIPTION
Speaker Volume	Select this to set the internal speakerphone volume. This controls both the internal speaker and the internal microphone.
Phone Volume	Select this to set the handset volume. This controls both the handset's speaker and its microphone.
Ring Volume	Select this to set the volume of the V500's ringtone. This setting applies to all configured group rings.
Headset Volume	Select this to set the volume of an attached headset (or any device connected to the external speaker and/or microphone sockets). This controls both the handset's speaker (earpiece) and its microphone.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

6.5.1 Volume Screen

When you select one of the options in the **Volume Setting** menu, a screen similar to the following displays. This example uses the **Speaker Volume** screen.

Figure 18 LCD Menu: Volume Screen



The following table describes the labels in this screen.

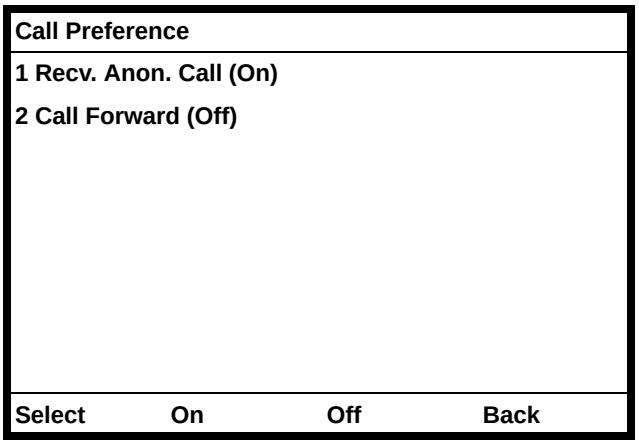
Table 14 LCD Menu: Volume Setting

LABEL	DESCRIPTION
Save	Press this to save your settings.
Up	Press this to increase the volume.
Down	Press this to decrease the volume.
Cancel	Select this to return to the previous screen without saving your settings.

6.6 The Call Preference Menu

Use these menus to allow or prohibit incoming calls that do not carry caller ID information, and to set up call forwarding. Select **Call Preference**. The following screen displays.

Figure 19 LCD Menu: Call Preference



The following table describes the labels in this screen.

Table 15 LCD Menu: System Info

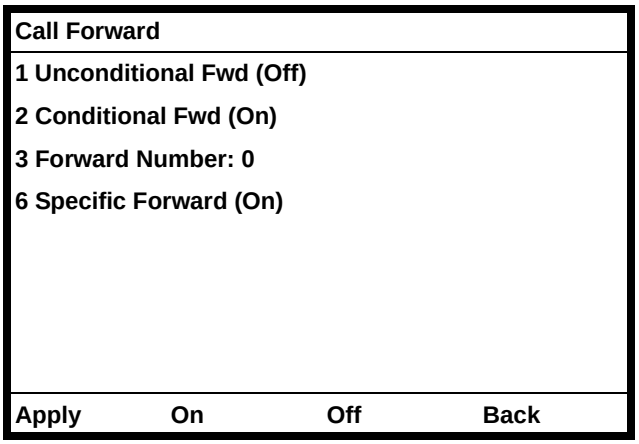
LABEL	DESCRIPTION
Recv. Anon. Call	When you turn this on, the V500 allows incoming calls that do not have caller ID. When you turn this off, the V500 allows only incoming calls that have caller ID.
Call Forward	Enable this to set the V500 to redirect incoming calls to other phone numbers.
Select	Press this to choose the highlighted field in the menu.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Back	Press this to return to the previous screen.

6.6.1 Call Forward

Use these menus to set up and activate different kinds of call redirection for incoming calls. Enable and select **Call Preference** > **Call Forward**. The following screen displays.

Note: The **Call Forward (On/Off)** option in the previous screen (Section 6.6 on page 87) must be set to **On** for these configuration settings to be functional and, in the case of **Forward Number**, editable.

Figure 20 LCD Menu: Call Forward



The following table describes the labels in this screen.

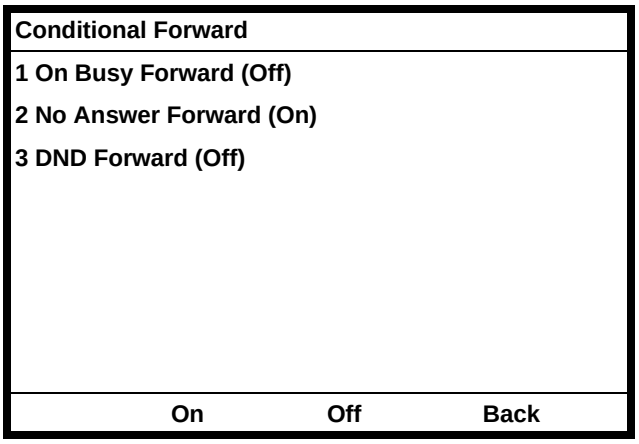
Table 16 LCD Menu: Call Forward

LABEL	DESCRIPTION
Unconditional Fwd	Select this to have the V500 forward calls under all circumstances.
Conditional Fwd	Select this to set up call forwarding under certain specific circumstances.
Forward Number	Select this to set the phone number to which you want the V500 to forward calls. This setting does not apply to specific call forwarding.
Specific Forward	Select this to have the V500 forward calls that come from specific phone numbers only. You can set up to ten call forwarding rules, each of which can forward calls to a different phone number.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Apply	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

6.6.1.1 Conditional Forward

Use this menu to specify the conditions under which you want calls to be redirected. Enable and select **Call Preference** > **Call Forward > Conditional Forward**. The following screen displays.

Figure 21 LCD Menu: Conditional Forward



The following table describes the labels in this screen.

Table 17 LCD Menu: Conditional Forward

LABEL	DESCRIPTION
On Busy Forward	Select this to forward incoming calls when a call is already in progress on the V500.
No Answer Forward	Select this to forward incoming calls when you do not answer.
DND Forward	Select this to forward incoming calls when DND (Do Not Disturb) is switched on.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Back	Press this to return to the previous screen.

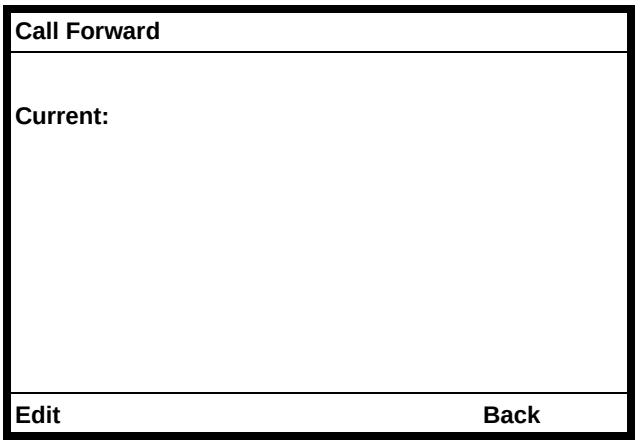
6.6.1.2 Forward Number

Use this menu to set the phone number to which calls are redirected.

Note: This phone number is used for unconditional and conditional call forwarding, but not for specific call forwarding.

Select **Call Preference** > **Call Forward** > **Forward Number**. The following screen displays.

Figure 22 LCD Menu: Forward Number



The following table describes the labels in this screen.

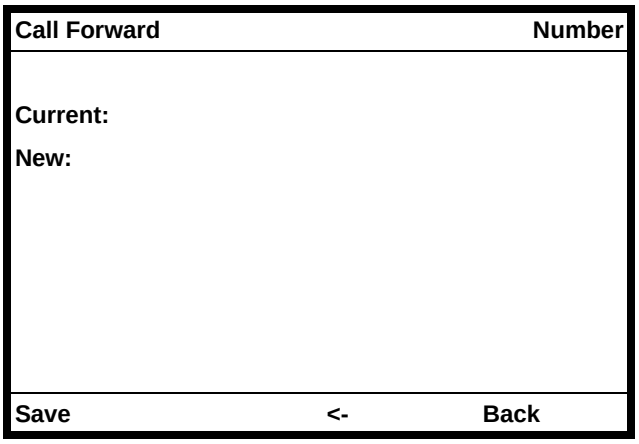
Table 18 LCD Menu: Forward Number

LABEL	DESCRIPTION
Current	This is the phone number to which the V500 forwards calls at the moment.
Edit	Press this to change the phone number to which the V500 forwards calls.
Back	Press this to return to the previous screen.

6.6.1.2.1 Forward Number - Edit

Press **Edit** in the **Forward Number** screen to change the phone number to which the V500 forwards calls. The following screen displays.

Figure 23 LCD Menu: Forward Number - Edit



The following table describes the labels in this screen.

Table 19 LCD Menu: Forward Number - Edit

LABEL	DESCRIPTION
Current	This is the phone number to which the V500 forwards calls at the moment.
New	Enter the number you want the V500 to use for forwarding calls.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

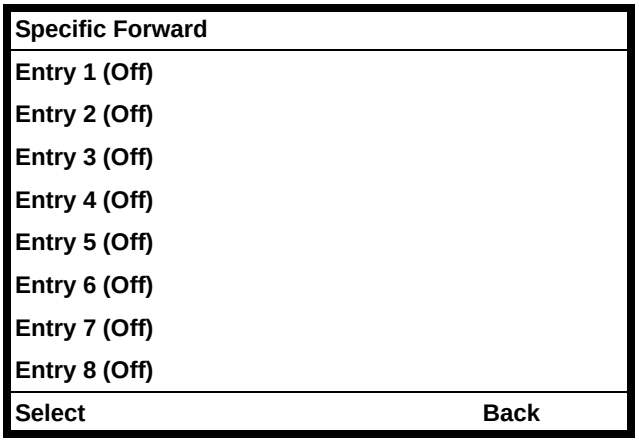
6.6.1.3 Specific Forward

These menus allow you to set the V500 to recognize incoming calls from a certain particular number and then redirect the calls to another number. You can configure up to ten specific call forwarding rules. Each incoming call number can be set to redirect to a different call forwarding number.

Enable and select **Call Preference** > **Call Forward** > **Specific Forward**. The following screen displays.

You can configure up to ten specific forwarding entries.

Figure 24 LCD Menu: Specific Forward Entry Table



The following table describes the labels in this screen.

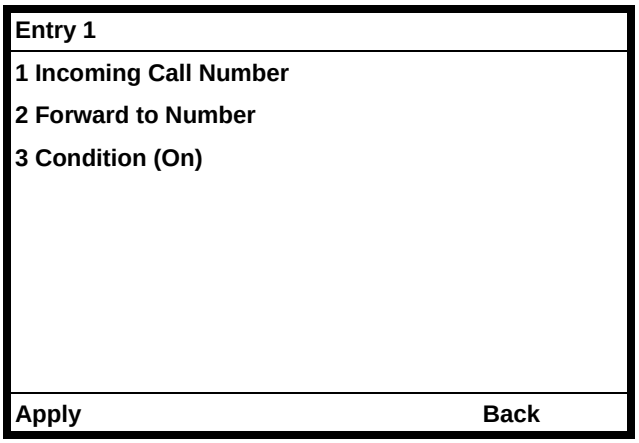
Table 20 LCD Menu: Specific Forward Entry Table

LABEL	DESCRIPTION
Entry 1 ~ 10	Select a specific call forwarding entry to see or edit the corresponding rule.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

6.6.1.3.1 Specific Forward Entry

Use the specific forward entries to specify the incoming caller's number, the number to which you want the call to be redirected, and the conditions under which it should be redirected. When you enable and select an **Entry** in the **Specific Forward Entry Table** menu, the following menu displays. This example uses entry 1.

Figure 25 LCD Menu: Specific Forward Entry



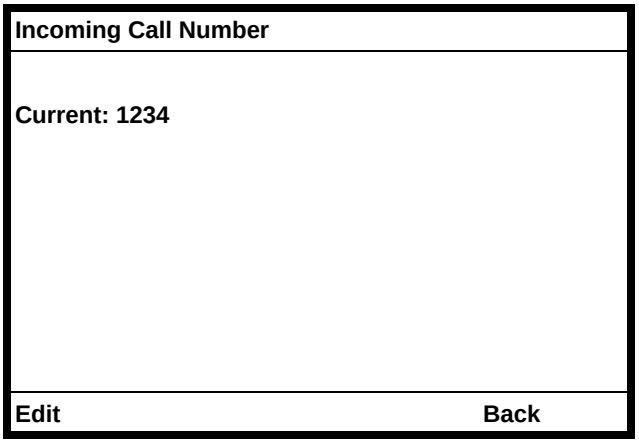
The following table describes the labels in this screen.

Table 21 LCD Menu: Specific Forward Entry

LABEL	DESCRIPTION
Incoming Call Number	Select this to see or edit the phone number to which this rule applies.
Forward to Number	Select this to see or edit the phone number to which the V500 forwards calls.
Condition	Select this to see or edit the conditions under which the V500 forwards calls from this **Incoming Call Number.**
Apply	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

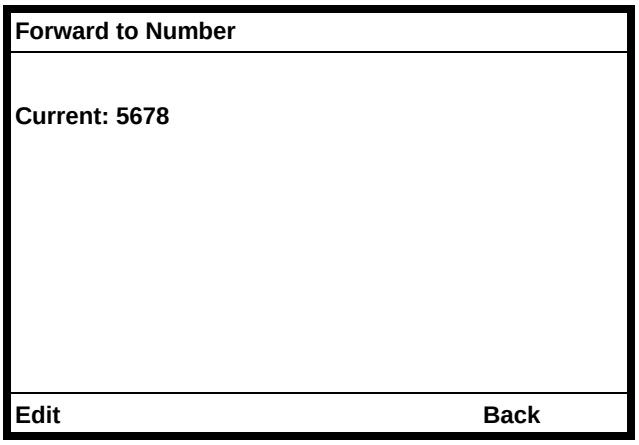
Take the following steps to configure a specific forward entry.

1 Select **Incoming Call Number** in the **Specific Forward Entry** menu. The following screen displays.



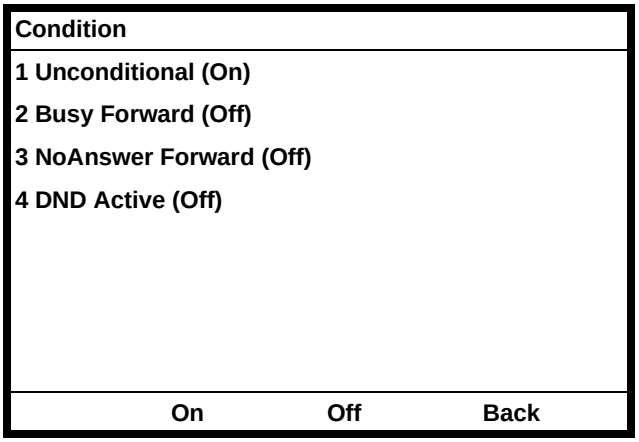
2 Press **Edit**. Enter the new incoming call number and press **Save**. The **Specific Forward Entry** menu displays.

3 Select **Forward to Number**. The following screen displays.



4 Press **Edit**. Enter the number you want calls to redirect to and press **Save**. The **Specific Forward Entry** menu displays again.

5 Select **Condition**. The following screen displays.



6 Select the conditions under which you want calls from this number to be redirected.

- Enable **Unconditional** to have the V500 always redirect calls from this number.
- Enable **Busy Forward** to have the V500 redirect calls if the line is busy.
- Enable **NoAnswer Forward** to have the V500 redirect calls if you do not pick up.
- Enable **DND Active** to have the V500 redirect calls from this number if you have DND (Do Not Disturb) turned on.

7 Press **Back**. The **Specific Forward Entry** menu displays.

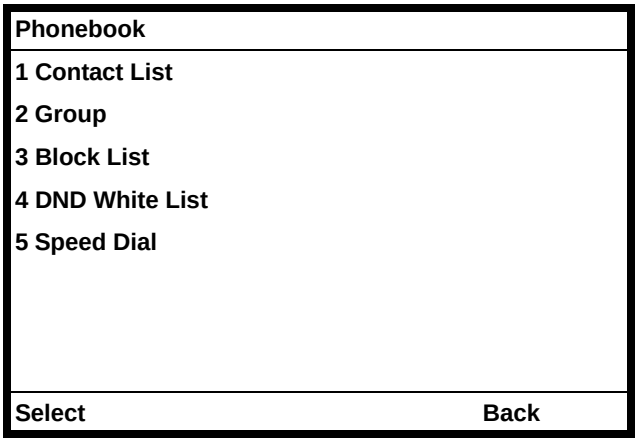
8 Ensure that **On** is also selected in the **Specific Forward** and **Call Forward** menus. Your specific forward entry is successfully configured.

6.7 The Phonebook Menu

Use the phonebook to set up a list of your contacts. You can also assign your contacts to groups, block calls from them, allow them to call you even when you have DND (Do Not Disturb) turned on, and set up speed dial entries.

Select **Phonebook**. The following screen displays.

Figure 26 LCD Menu: Phonebook



The following table describes the labels in this screen.

Table 22 LCD Menu: Phonebook

LABEL	DESCRIPTION
Contact List	Select this to set up, edit or delete a phonebook entry.
Group	Select this to see the phonebook entries belonging to each group.
Block List	Select this to see the phone numbers that are prevented from calling the V500.
DND White List	Select this to see which contacts (phonebook entries) are allowed to call the V500 even when DND (Do Not Disturb) is turned on.
Speed Dial	Select this to see or configure speed dial entries.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

6.7.1 Contact List

Use the Contact List to add, edit or remove entries from the phonebook. Use the navigator and press the yellow **SEND** key to call the selected entry (the V500 uses the speakerphone and the default line and SIP account to make the call).

Select **Phonebook** > **Contact List**.

Note: You can also press the **PHONEBOOK** key on the V500 to access the Contact List.

See Chapter 5 on page 73 for information on using the Contact List.

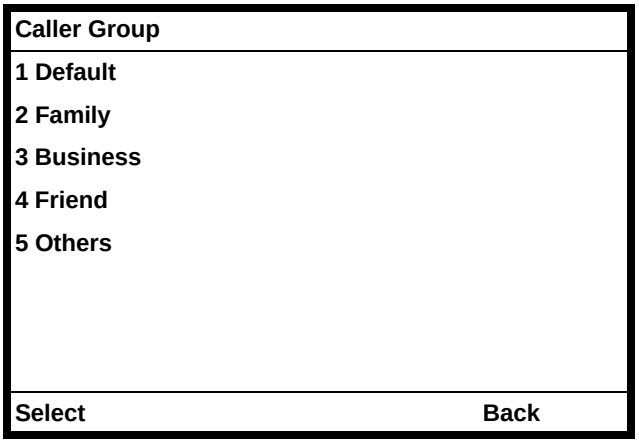
6.7.2 Caller Group

Use these menus to see which of your contacts belong to the predefined groups on the V500. You can set the V500 to ring differently when people from different groups call you.

Note: Configure which group a contact belongs to in the **Phonebook** > **Contact List** screen. Configure group rings in the **Ring Setting** screen.

Select **Phonebook** > **Group**. The following screen displays.

Figure 27 LCD Menu: Caller Group



The following table describes the labels in this screen.

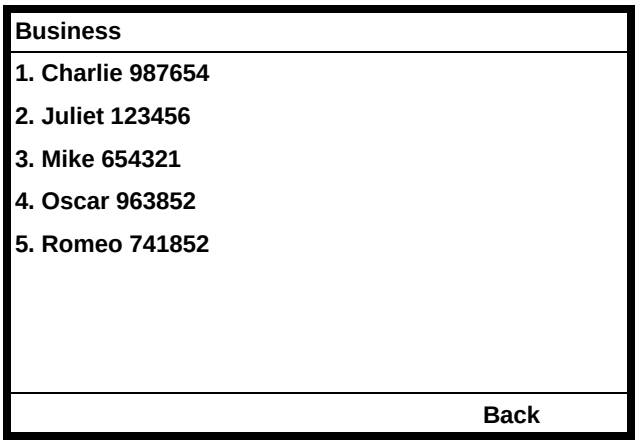
Table 23 LCD Menu: Caller Group

LABEL	DESCRIPTION
Default / Family / Business / Friend / Others	Select one of the groups to see which of your contacts belong to the group. If you did not specify a group when you set up a contact's phonebook entry, the contact belongs to the **Default** group.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

6.7.2.1 The Caller Group List

Select one of the options in the Caller Group menu to display a list of the contacts who belong to that group. This example shows the list of **Business** contacts.

Figure 28 LCD Menu: Caller Group List



Scroll through the list using the navigator, and press the yellow **SEND** key to make a call to the highlighted contact. The V500 uses the speakerphone and the default line and SIP account to make the call. Alternatively, press **Back** to return to the previous screen.

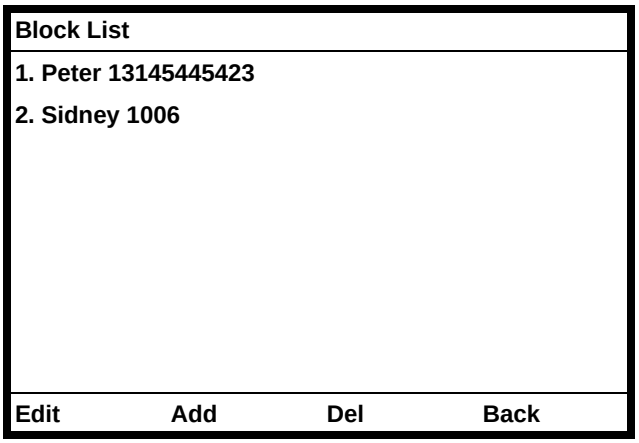
6.7.3 Block List

This shows the phone numbers that are barred from calling you. When you are called from a number on the Block List, the V500 does not ring.

Note: You can either configure the numbers you want to block in this screen (press **Add**) or set an entry in the **Contact List** to be blocked.

Select **Phonebook > Block List**. The following screen displays.

Figure 29 LCD Menu: Block List



The following table describes the labels in this screen.

Table 24 LCD Menu: Block List

LABEL	DESCRIPTION
Edit	Press this to change the details of an entry in the list.
Add	Press this to block incoming calls from a phone number that does not belong to one of your contacts. If you want to block one of your contacts, edit the contact's phonebook entry (activate **Block** in the **Phonebook** > **Contact List** > **Edit** menu).
Delete	Press this to remove an entry from the list.
Back	Press this to return to the previous screen.

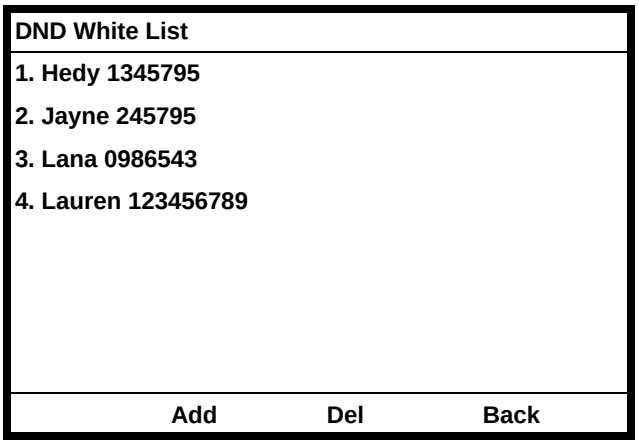
6.7.4 DND White List

This shows which of your contacts can call you when DND (Do Not Disturb) is turned on. When someone on the DND White List calls, the V500 rings whether DND is on or not.

Note: Only entries in your Contact List can be in the DND White List.

Select **Phonebook** > **DND White List**. The following screen displays.

Figure 30 LCD Menu: DND White List



The following table describes the labels in this screen.

Table 25 LCD Menu: Block List

LABEL	DESCRIPTION
Add	Press this to add a phonebook entry to the list.
Delete	Press this to remove an entry from the list. When you do this, the Contact List entry itself is not deleted.
Back	Press this to return to the previous screen.

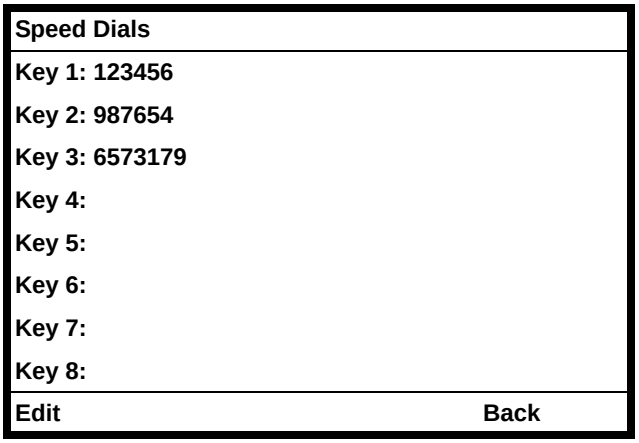
6.7.5 The Speed Dial Menu

This menu allows you to set up one-touch calling. You can map a phone number to an alphanumeric keypad key (**0** to **9**) and then use that keypad key to call the phone number (press and hold the key for one second or longer).

Note: If you want to call SIP numbers directly, or call SIP numbers that use letters, you need to set up a speed dial entry.

Select **Speed Dial** in the **Phonebook** menu. The following screen displays.

Figure 31 LCD Menu: Speed Dial



The following table describes the labels in this screen.

Table 26 LCD Menu: Speed Dial

LABEL	DESCRIPTION
Edit	Highlight an entry in the list using the navigator, then press **Edit** to configure the entry.
Back	Press this to return to the previous screen.

6.7.5.1 Using Speed Dial

Do the following to call a number you configured in the **Speed Dial** menu:

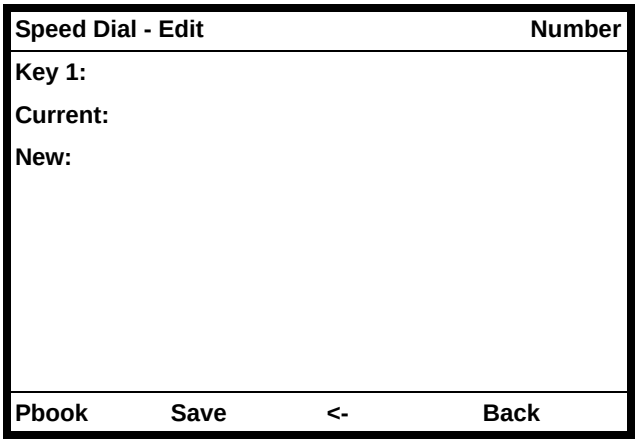
1. Activate a line. Check you can hear a dial tone.
2. Press the alphanumeric keypad key and hold it down for one second or longer.

   For example, if you set the **SK0** rule in the **Speed Dial** menu to call the number “987654”, press and hold the **0** key to call “987654”.

6.7.5.2 The Speed Dial - Edit Screen

The **Speed Dial - Edit** screen allows you to add and change the phone numbers that are mapped onto the alphanumeric keys. Press **Edit** in the **Speed Dial** screen. A screen similar to the following displays (this example uses the screen for the **0** alphanumeric key).

Figure 32 LCD Menu: Speed Dial - Edit



The following table describes the labels in this screen.

Table 27 LCD Menu: Speed Dial - Edit

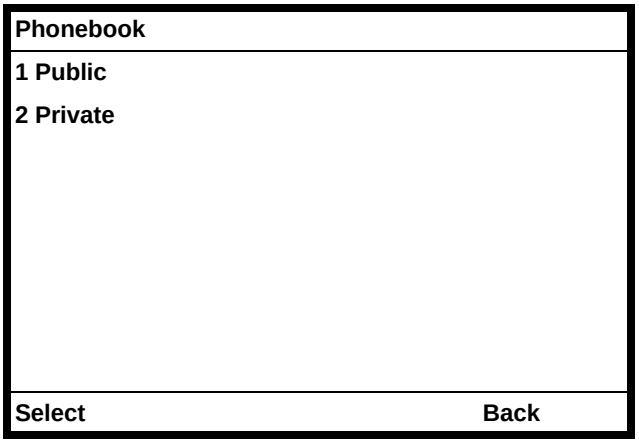
LABEL	DESCRIPTION
SK0 ~ SK9	This shows the alphanumeric key you press to call this speed dial number. For example, press and hold the 5 for one second or longer key to call the number configured in the **SK5** rule.
Current	This is the phone number already configured for this speed dial rule.
New	Enter the phone number you want the V500 to call when you use this speed dial key.
Mode	Cycle through different character input modes using the **#** key.
Pbook	Press this to use a phone number from the phonebook as the new speed dial number.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

6.7.5.2.1 Speed Dial - Edit Phonebook

Take the following steps to map a phonebook entry to a speed dial key

1 Press **Pbook** in the **Speed Dial** screen. The following screen displays.

Figure 33 LCD Menu: Speed Dial - Edit Phonebook



The **Public** phonebook contains contact details obtained from an auto-provisioning server. The **Private** phonebook contains the contact details you set up on the V500.

Select the phonebook you want to use.

2 The **Contact List** menu displays (see Chapter 5 on page 73). Choose the entry you want to map to the speed dial key and press **Select**.

3 The **Speed Dial - Edit** screen appears, with the contact's name in the **New** field. Press **Save**.

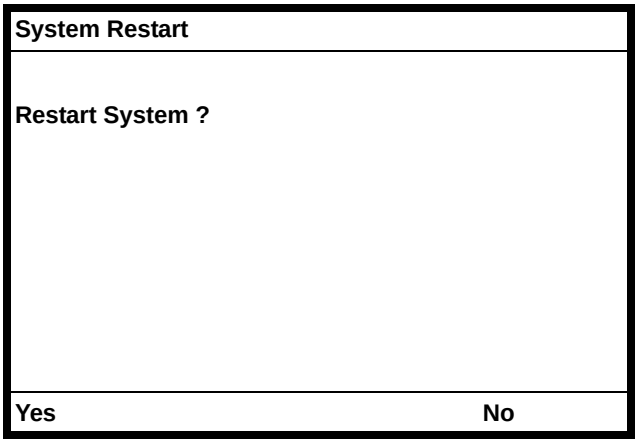
6.8 The Advanced Setting Menu

Use this menu to configure network and SIP account settings, set the V500 to get its configuration from an auto-provisioning server, or program the custom keys (see your Quick Start Guide for hardware information). See Chapter 7 on page 107 for information on the **Advanced Setting** menu.

6.9 The System Restart Menu

Use this screen to restart the V500 without turning the power off. Select **System Restart**. The following screen displays.

Figure 34 LCD Menu: System Restart



The following table describes the labels in this screen.

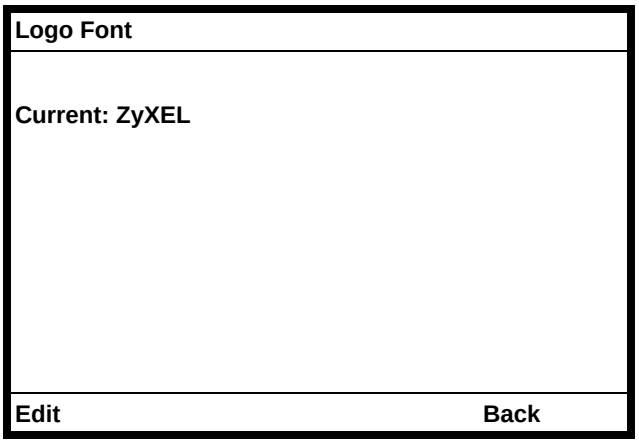
Table 28 LCD Menu: System Restart

LABEL	DESCRIPTION
Yes	Press this to restart the V500. Note: When you use this function, the V500's settings do NOT return to their factory defaults. If you want to reset the V500 to its factory defaults, use the RESET button on the rear of the device (see your Quick Start Guide for hardware information).
No	Press this to return to the previous screen without restarting the V500.

6.10 The Logo Setting Menu

Use this screen to set the logo that appears in the main screen when the phone is idle. By default, the logo is “ZyXEL” but you can, of course, change this to whatever you want (such as your own company name or a department number, for example).

Figure 35 LCD Menu: Logo Setting Menu



The following table describes the labels in this screen.

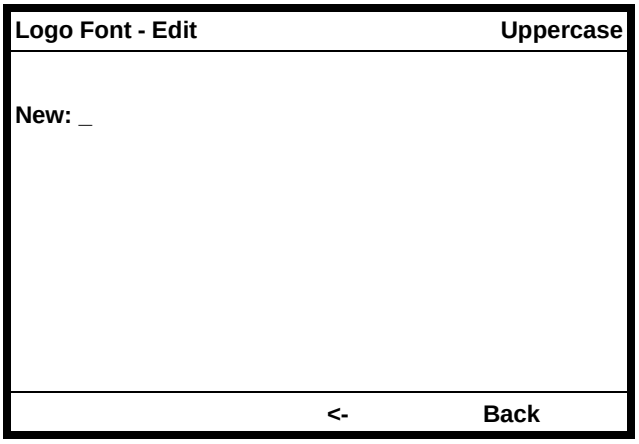
Table 29 LCD Menu: Logo Setting Menu

LABEL	DESCRIPTION
Current	This displays the current logo being used by the V500.
Edit	Press this to open the Logo Edit screen, where you can customize the logo.
Back	Press this to return to the previous screen.

6.10.1 The Logo Setting - Edit Screen

Use this screen to change your V500's existing logo.

Figure 36 LCD Menu: Logo Setting - Edit



The following table describes the labels in this screen.

Table 30 LCD Menu: Logo Setting - Edit

LABEL	DESCRIPTION
New	Enter the new logo for your V500 on this line..
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7

LCD Menus: Advanced

7.1 Overview

This chapter discusses using the V500's Advanced LCD menus.

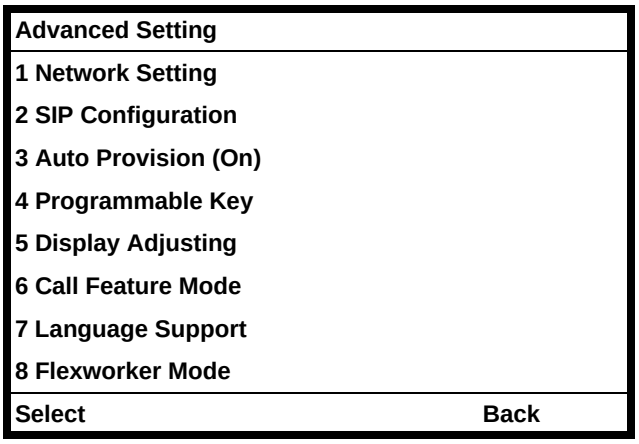
7.1.1 What You Can Do in This Chapter

- Set up your V500's IP address - see Section 7.3.2 on page 114 and Section 7.3.3 on page 120.
- Set up PPPoE (Point-to-Point Protocol over Ethernet) - see Section 7.3.1 on page 109.
- Set up your VoIP (SIP) account(s) on the V500 - see Section 7.4 on page 122.
- Set up your V500 to get its settings automatically - see Section 7.5 on page 155.
- Set up your V500's configurable keys - see Section 7.6 on page 164.
- Change the LCD screen display settings - see Section 7.7 on page 166.
- Set up your V500's Flexworker feature - see Section 7.10 on page 171.
- Configure the three built-in clock alarms - see Section 7.11 on page 174.
- Turn the V500's ACD mode on and off - see Section 7.12 on page 182.

7.2 The Advanced Setting Menu

Select **Advanced Setting**. The following screen displays.

Figure 37 LCD Menu: Advanced Setting



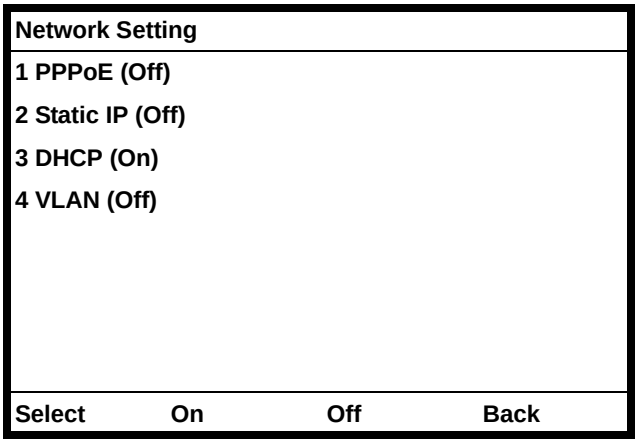
See the rest of this chapter for information on each of these menus. For background information, see the relevant chapter in the web configurator section of this User's Guide.

7.3 The Network Setting Menu

Use these menus to configure the V500's IP address, and PPPoE username and password.

Select **Advanced Setting** > **Network Setting**. The following screen appears.

Figure 38 LCD Menu: Network Setting



The following table describes the labels in this screen.

Table 31 LCD Menu: Network Setting

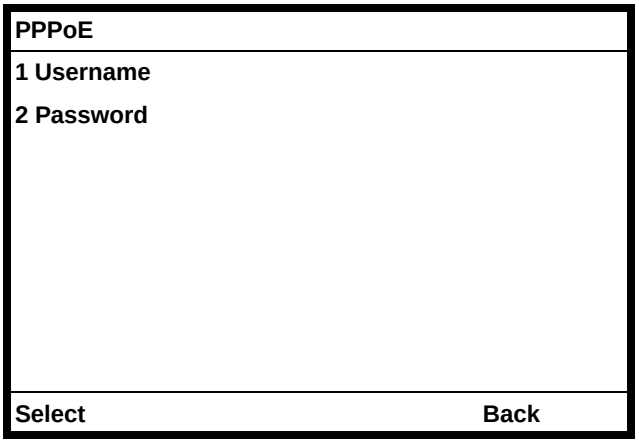
LABEL	DESCRIPTION
PPPoE	Use this to configure the V500's PPPoE username and password, if it is a PPPoE client.
Static IP	Use this if you have an IP address to use for the V500.
DHCP	Use this if you do not have an IP address to use for the V500. The V500 obtains an address automatically from a DHCP server on the network.
VLAN	Use this menu to configure the V500's voice VLAN ID and priority.
Select	Press this to choose the highlighted field in the menu.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Back	Press this to return to the previous screen.

7.3.1 The PPPoE Menu

Use this menu to configure your V500's PPPoE username and password, if it is a PPPoE client. Enter your details exactly as your ISP or network administrator gave them to you.

Enable and select **Advanced Setting** > **Network Setting** > **PPPoE**. The following screen displays.

Figure 39 LCD Menu: PPPoE



The following table describes the labels in this screen.

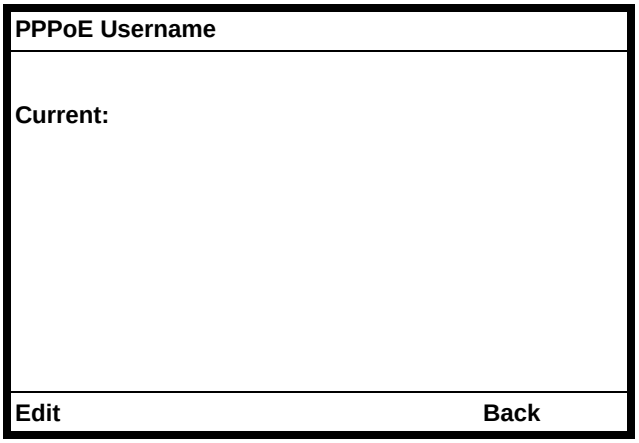
Table 32 LCD Menu: PPPoE

LABEL	DESCRIPTION
Username	Enter your PPPoE username.
Password	Enter your PPPoE password.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

7.3.1.1 PPPoE Username

Enable and select **Advanced Setting** > **Network Setting** > **PPPoE** > **Username**. The following screen displays.

Figure 40 LCD Menu: PPPoE Username



The following table describes the labels in this screen.

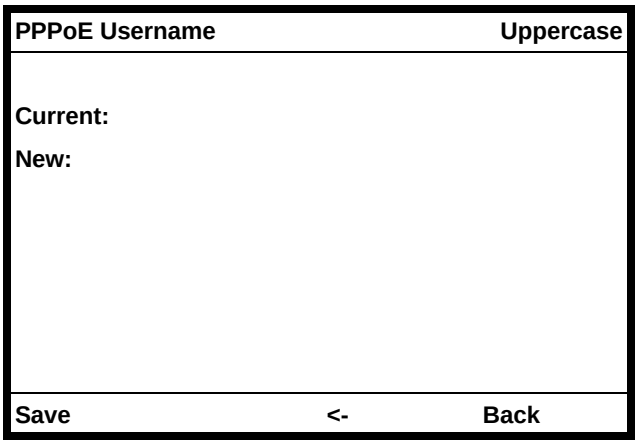
Table 33 LCD Menu: PPPoE Username

LABEL	DESCRIPTION
Current	This is the PPPoE username currently configured on the V500.
Edit	Press this to enter a different PPPoE username.
Back	Press this to return to the previous screen.

7.3.1.1.1 PPPoE Username - Edit

If you press **Edit** in the **PPPoE Username** screen, the following screen displays.

Figure 41 LCD Menu: PPPoE Username - Edit



The following table describes the labels in this screen.

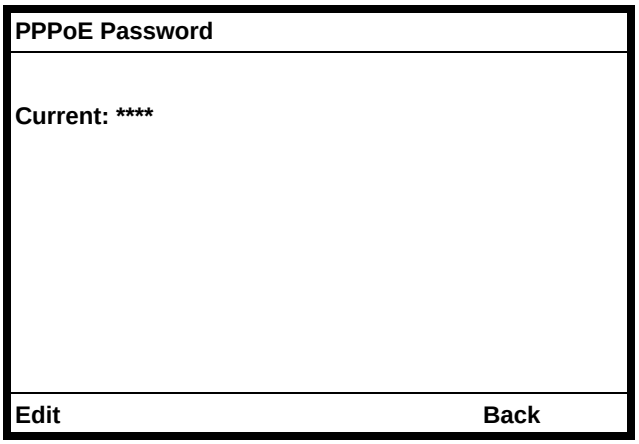
Table 34 LCD Menu: PPPoE Username - Edit

LABEL	DESCRIPTION
Current	This is the static IP address currently configured on the V500.
New	Enter the static IP address you want the V500 to use in dotted decimal notation.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.3.1.2 PPPoE Password

Enable and select **Advanced Setting > Network Setting > PPPoE > Password**. The following screen displays.

Figure 42 LCD Menu: PPPoE Password



The following table describes the labels in this screen.

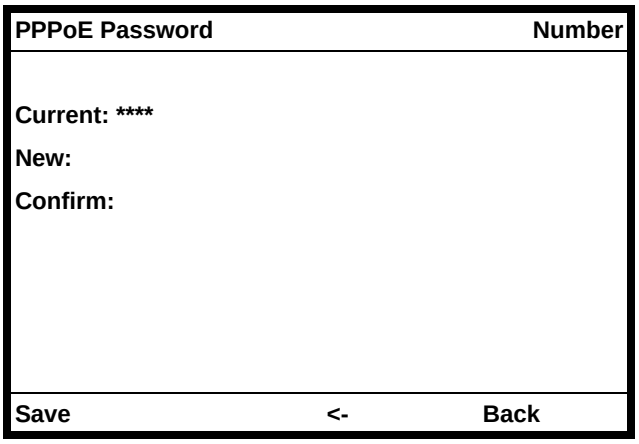
Table 35 LCD Menu: PPPoE Password

LABEL	DESCRIPTION
Current	Each asterisk (*) represents one character of the PPPoE password configured on the V500.
Edit	Press this to enter a different PPPoE password.
Back	Press this to return to the previous screen.

7.3.1.2.1 PPPoE Password - Edit

Press **Edit** in the **PPPoE** > **PPPoE Password** screen. The following screen displays.

Figure 43 LCD Menu: PPPoE Password - Edit



The following table describes the labels in this screen.

Table 36 LCD Menu: PPPoE Username - Edit

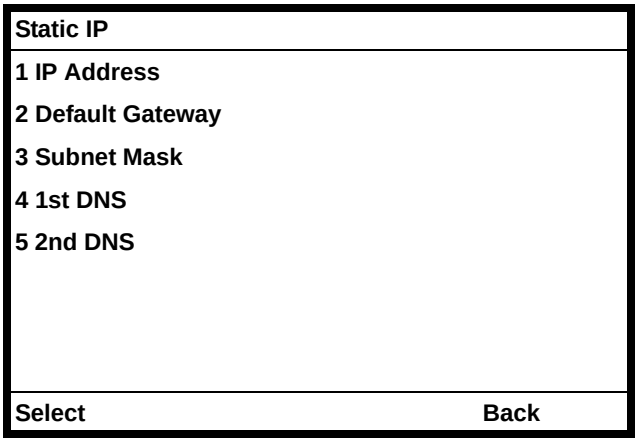
LABEL	DESCRIPTION
Current	This is the static IP address currently configured on the V500.
New	Enter the PPPoE password you want the V500 to use.
Confirm	Re-enter the new PPPoE password.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.3.2 Static IP

Use this menu to manually configure your V500's IP address, subnet mask and gateway settings. Enter the settings exactly as your ISP or network administrator gave them to you.

Enable and select **Advanced Setting** > **Network Setting** > **Static IP**. The following screen displays.

Figure 44 LCD Menu: Static IP



The following table describes the labels in this screen.

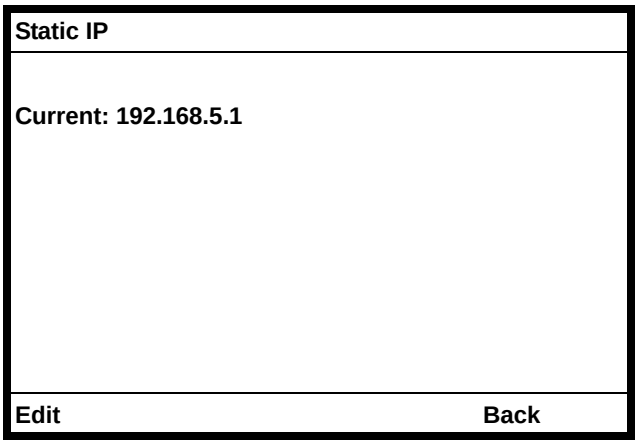
Table 37 LCD Menu: Static IP

LABEL	DESCRIPTION
IP Address	Select this to set the static IP address you want the V500 to use.
Default Gateway	Select this to set the IP address of the device your V500 uses to access the Internet.
Subnet Mask	Select this to enter the subnet mask your V500 uses.
1st DNS	Select this to enter the primary DNS (Domain Name System) server's IP address.
2nd DNS	Select this to enter the secondary (backup) DNS server's IP address.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

7.3.2.1 IP Address

Enable and select **Advanced Setting > Network Setting > Static IP** > **IP Address**. The following screen displays.

Figure 45 LCD Menu: IP Address



The following table describes the labels in this screen.

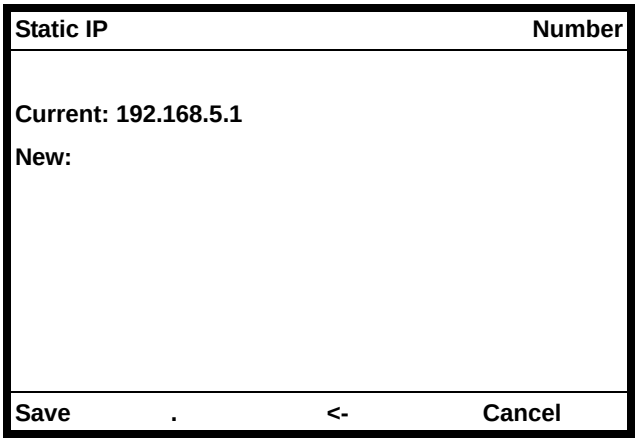
Table 38 LCD Menu: IP Address

LABEL	DESCRIPTION
Current	This is the static IP address currently configured on the V500.
Edit	Press this to enter a different static IP address.
Back	Press this to return to the previous screen.

7.3.2.1.1 IP Address - Edit

Press **Edit** in the **IP Address** screen. The following screen displays.

Figure 46 LCD Menu: IP Address - Edit



The following table describes the labels in this screen.

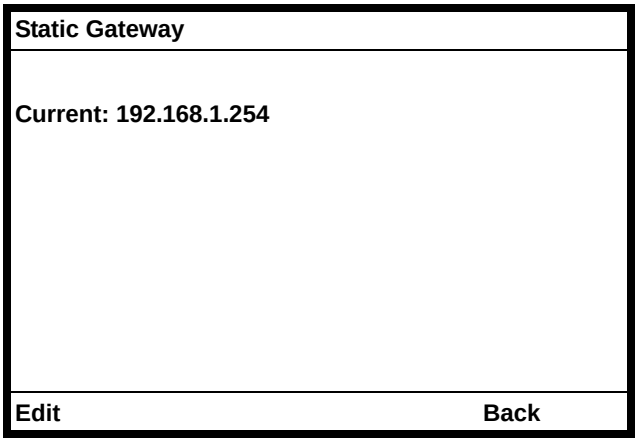
Table 39 LCD Menu: IP Address - Edit

LABEL	DESCRIPTION
Current	This is the static IP address currently configured on the V500.
New	Enter the static IP address you want the V500 to use in dotted decimal notation.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.3.2.2 Default Gateway

Enable and select **Advanced Setting > Network Setting > Static IP > Default Gateway**. The following screen displays.

Figure 47 LCD Menu: Default Gateway



The following table describes the labels in this screen.

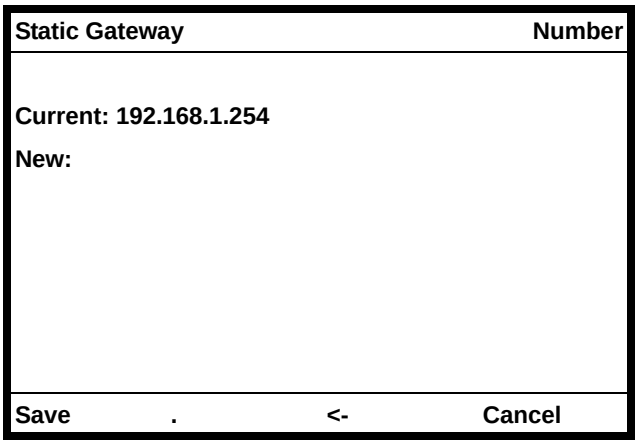
Table 40 LCD Menu: Default Gateway

LABEL	DESCRIPTION
Current	This is the static IP address of the device your V500 uses to access the Internet.
Edit	Press this to enter a different static gateway IP address.
Back	Press this to return to the previous screen.

7.3.2.2.1 Default Gateway - Edit

Press **Edit** in the **Default Gateway** screen. The following screen displays.

Figure 48 LCD Menu: Default Gateway - Edit



The following table describes the labels in this screen.

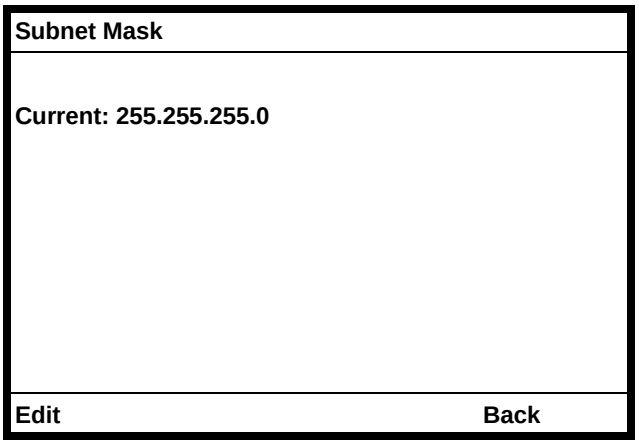
Table 41 LCD Menu: Default Gateway - Edit

LABEL	DESCRIPTION
Current	This is the static IP address of the device your V500 is using to access the Internet.
New	Enter the static IP address of the new gateway in dotted decimal notation.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.3.2.3 Subnet Mask

Enable and select **Advanced Setting > Network Setting > Static IP > Subnet Mask**. The following screen displays.

Figure 49 LCD Menu: Subnet Mask



The following table describes the labels in this screen.

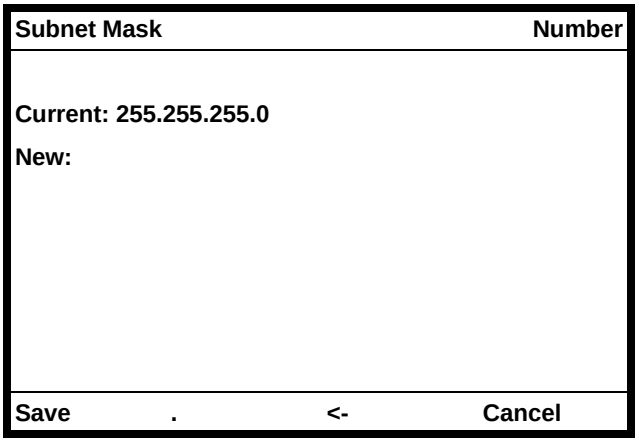
Table 42 LCD Menu: Subnet Mask

LABEL	DESCRIPTION
Current	This is the subnet mask your V500 is configured to use.
Edit	Press this to enter a different subnet mask.
Back	Press this to return to the previous screen.

7.3.2.3.1 Subnet Mask - Edit

Press **Edit** in the **Subnet Mask** screen. The following screen displays.

Figure 50 LCD Menu: Subnet Mask - Edit



The following table describes the labels in this screen.

Table 43 LCD Menu: Subnet Mask - Edit

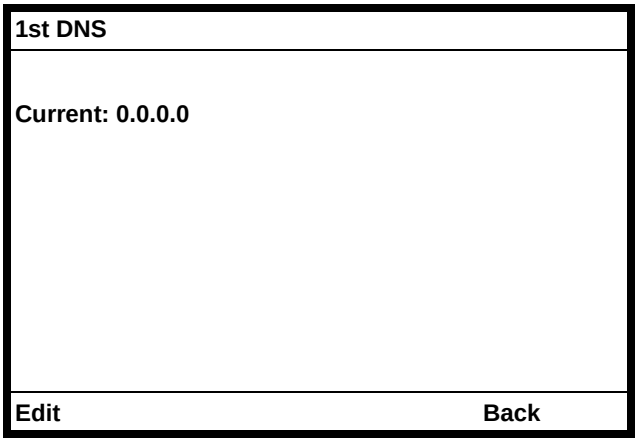
LABEL	DESCRIPTION
Current	This is the subnet mask your V500 is configured to use.
New	Enter the new subnet mask in dotted decimal notation.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.3.2.4 First and Second DNS Servers

Use these screens to enter the IP address(es) of DNS (Domain Name System) servers on your network. Use **1st DNS** for the primary (main) server, and use **2nd DNS** if you have information about a secondary (backup) server.

Enable and select **1st DNS** or **2nd DNS** in the **Advanced Setting > Network Setting** > **Static IP** menu. A screen similar to the following displays (this example uses the **1st DNS** screen).

Figure 51 LCD Menu: First / Second DNS



The following table describes the labels in this screen.

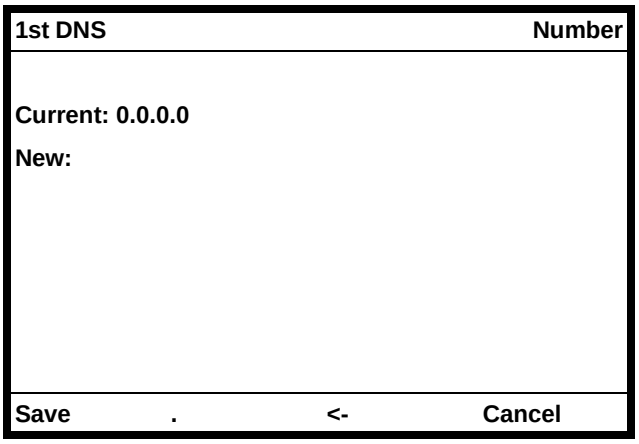
Table 44 LCD Menu: First / Second DNS

LABEL	DESCRIPTION
Current	This is the IP address of the DNS server already configured on the V500.
Edit	Press this to enter a different DNS server IP address.
Back	Press this to return to the previous screen.

7.3.2.4.1 First / Second DNS - Edit

Press **Edit** in the **1st DNS** or **2nd DNS** screen. A screen similar to the following displays (this example uses the **1st DNS** screen).

Figure 52 LCD Menu: First / Second DNS - Edit



The following table describes the labels in this screen.

Table 45 LCD Menu: First / Second DNS - Edit

LABEL	DESCRIPTION
Current	This is the subnet mask your V500 is configured to use.
New	Enter the DNS server's IP address in dotted decimal notation.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.3.3 DHCP

Use DHCP to have the V500 get an IP address automatically from a DHCP server on the network.

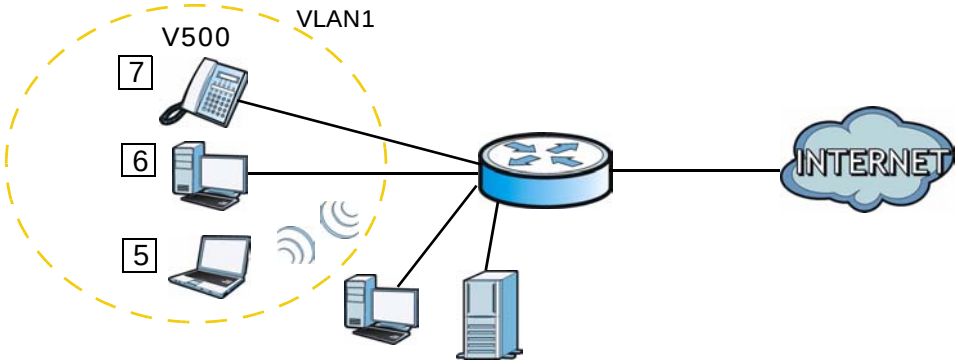
Select **Advanced Setting** > **Network Settings**. In the screen that displays, ensure that **DHCP** is enabled.

Note: DHCP is enabled by default.

7.3.4 The VLAN Menu

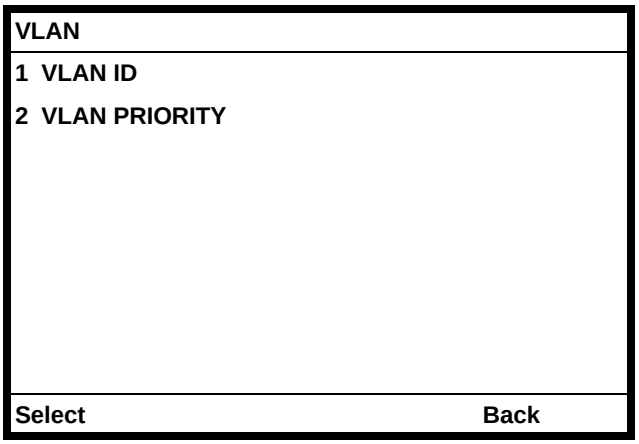
The V500 can be a member of a VLAN group to communicate with the SIP server. You can assign the V500's traffic priority that goes through the VLAN group.

In the following example, the V500, a desktop and a notebook are all in VLAN1 group. This VLAN group can access the Internet through a gateway. The VoIP traffic used by the V500 within VLAN1 has the highest priority, so its VLAN Priority is set to 7. The WAN and WLAN traffic used by the desktop and notebook are set to lower priority.



In this menu, configure your V500's voice VLAN ID and priority. Enable and select **Advanced Setting** > **Network Setting** > **VLAN**. The following screen displays.

Figure 53 LCD Menu: VLAN



The following table describes the labels in this screen.

Table 46 LCD Menu: VLAN

LABEL	DESCRIPTION
VLAN ID	Enter the VLAN ID provided by your network administrator. Your LAN and gateway must be configured to use VLAN tags.
VLAN PRIORITY	If the V500 is a member of a VLAN group, you may choose a priority level for its VoIP traffic within the VLAN. The priority level is from **0-7**, with 0 being the lowest level and 7 being the highest level. You can assign the V500 with a higher traffic priority for better voice quality.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

7.4 The SIP Configuration Menus

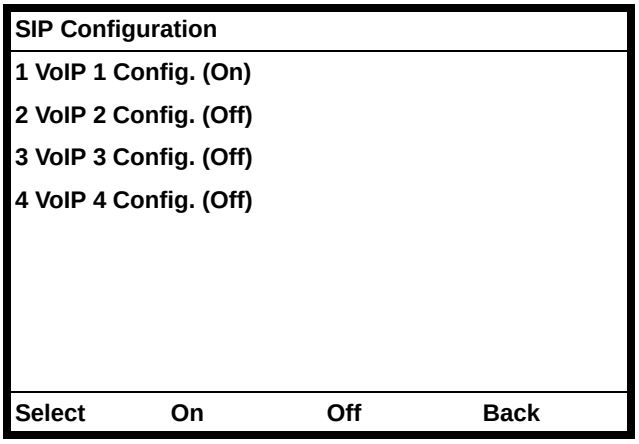
Use these menus to set up your V500 to use your existing Voice over Internet (VoIP) account(s). You can configure up to four VoIP accounts on the V500.

Note: Once you have configured the fields in these menus with the correct information, the V500 must register with the SIP server. You may need to restart the V500 to do this.

Note: Enter information in these menus exactly as you received it from your VoIP service provider. If you were not given information for any menu or field, leave it at its default setting.

Select **Advanced Setting** > **SIP Configuration**. The following screen displays.

Figure 54 LCD Menu: SIP Configuration



Highlight the SIP account you want to configure and press **On**. When a SIP account is active, the V500 tries to register it with the SIP server you configure.

Press **Select**. The **SIP Account Configuration** screen displays.

See the following sections for more information on each menu in this screen.

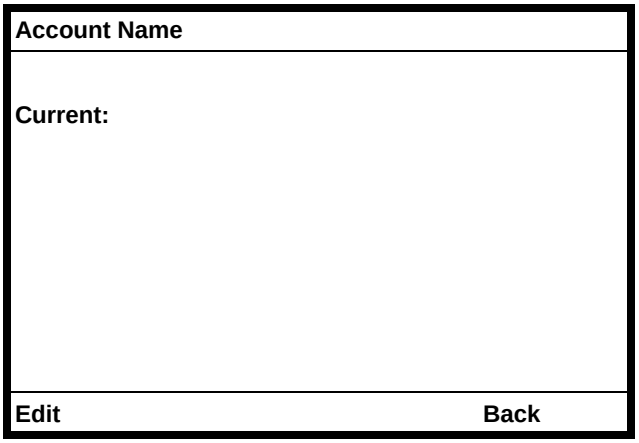
Table 47 LCD Menu: SIP Account Configuration

SIP (1 ~ 4) Configuration	
Display Name	see Section 7.4.1 on page 123
SIP Number	see Section 7.4.2 on page 125
SIP Local Port	see Section 7.4.3 on page 127
SIP Server Addr	see Section 7.4.4 on page 129
SIP Server Port	see Section 7.4.5 on page 131
SIP Register Server	see Section 7.4.6 on page 133
SIP Register Port	see Section 7.4.7 on page 135
SIP Service Domain	see Section 7.4.8 on page 137
SIP Auth ID	see Section 7.4.9 on page 139
Auth Password	see Section 7.4.10 on page 141
Codec Priority	see Section 7.4.11 on page 142
Voicemail Number	see Section 7.4.12 on page 143
DNS SRV (On/Off)	see Section 7.4.13 on page 144
Call ID (On)	see Section 7.4.14 on page 145
NAT Setting	see Section 7.4.15 on page 145
Backup SIP Server	see Section 7.4.16 on page 153

7.4.1 Display Name

Use this screen to change the name that appears in the LCD screen tab for this account. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > Display Name**. The following screen displays.

Figure 55 LCD Menu: Display Name



The following table describes the labels in this screen.

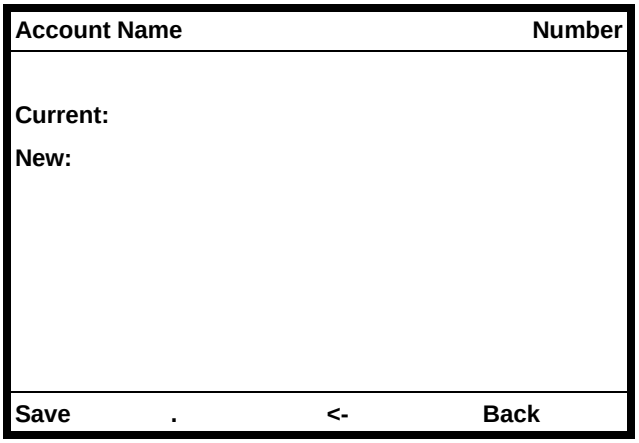
Table 48 LCD Menu: Display Name

LABEL	DESCRIPTION
Current	This shows the name already configured for this account.
Edit	Press this to enter the new name for this account.
Back	Press this to return to the previous screen.

7.4.1.1 Account Name - Edit

Press **Edit** in the **Account Name** screen. The following screen displays.

Figure 56 LCD Menu: Display Name - Edit



The following table describes the labels in this screen.

Table 49 LCD Menu: Display Name - Edit

LABEL	DESCRIPTION
Current	This shows the name already configured for this account.
New	Enter the new name for this account.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

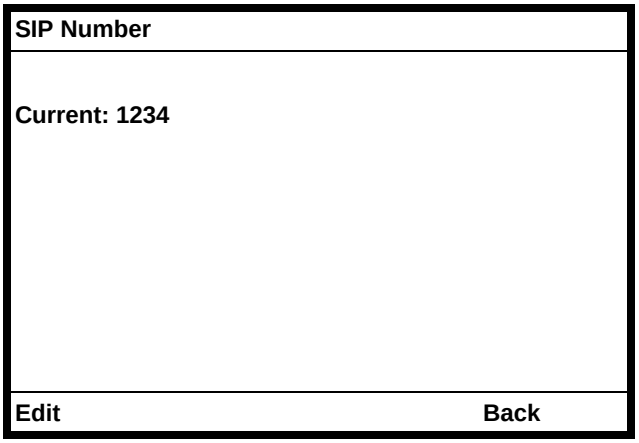
7.4.2 SIP Number

Use this to see and edit the SIP number for this SIP account.

Note: If you have a SIP account like “1234567@voip-provider.com”, the SIP Number is “1234567”.

Select **Advanced Settings > SIP Configuration > SIP (1 ~ 4) Configuration > SIP Number**. The following screen displays.

Figure 57 LCD Menu: SIP Number



The following table describes the labels in this screen.

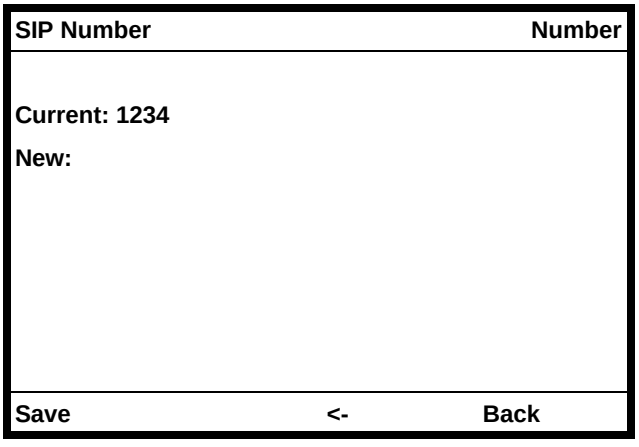
Table 50 LCD Menu: SIP Number

LABEL	DESCRIPTION
Current	This shows the SIP number already configured for this account.
Edit	Press this to enter the new SIP number for this account.
Back	Press this to return to the previous screen.

7.4.2.1 SIP Number - Edit

Press **Edit** in the **SIP Number** screen. The following screen displays.

Figure 58 LCD Menu: SIP Number - Edit



The following table describes the labels in this screen.

Table 51 LCD Menu: SIP Number - Edit

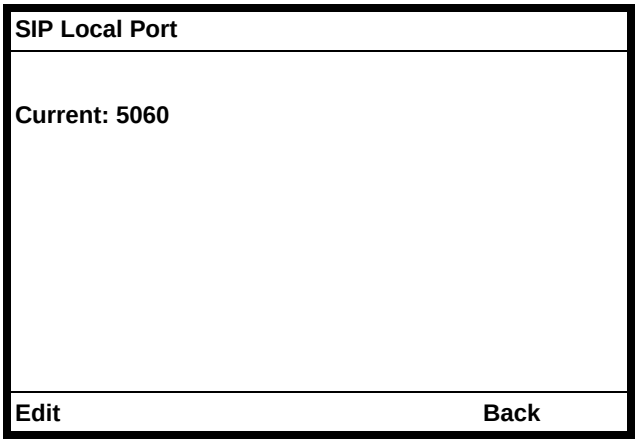
LABEL	DESCRIPTION
Current	This shows the SIP number already configured for this account.
New	Enter the SIP number you want this account to use.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.4.3 SIP Local Port

Use this screen to see and edit the port on the V500 this account uses to listen for incoming SIP calls.

Select **Advanced Setting > SIP Configuration > SIP (1 ~4) Configuration > SIP Local Port**. The following screen displays.

Figure 59 LCD Menu: SIP Local Port



The following table describes the labels in this screen.

Table 52 LCD Menu: SIP Local Port

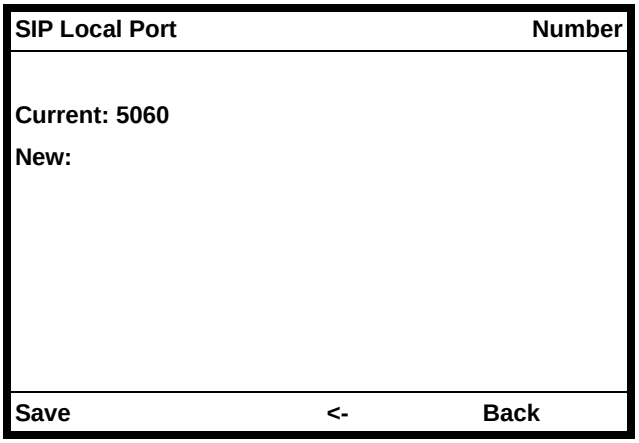
LABEL	DESCRIPTION
Current	This shows the SIP local port number already configured for this account.
Edit	Press this to enter the new SIP local port number for this account.
Back	Press this to return to the previous screen.

Note: Make no changes in this screen unless your service provider told you to.

7.4.3.1 SIP Local Port - Edit

Press **Edit** in the **SIP Local Port** screen. The following screen displays.

Figure 60 LCD Menu: SIP Local Port - Edit



The following table describes the labels in this screen.

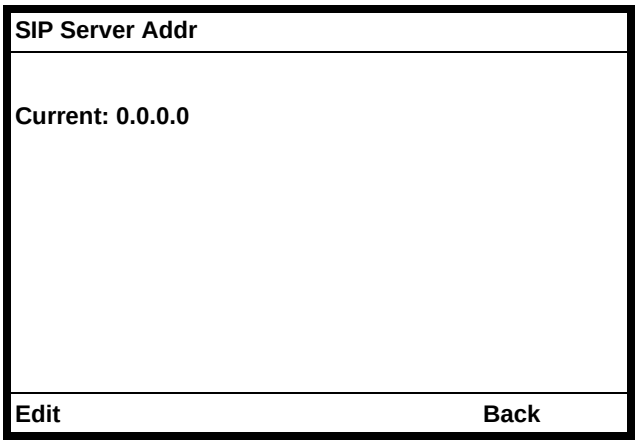
Table 53 LCD Menu: SIP Local Port - Edit

LABEL	DESCRIPTION
Current	This shows the SIP local port number already configured for this account.
New	Enter the new local port number for this account (from 1024 to 65535).
Mode	Cycle through different character input modes using the **#** key. Note: The port number can consist of numerals (0 ~ 9) only.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.4 SIP Server Address

Use this menu to see and edit the IP address of the SIP server for this account. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > SIP Server Addr**. The following screen displays.

Figure 61 LCD Menu: SIP Server Address



The following table describes the labels in this screen.

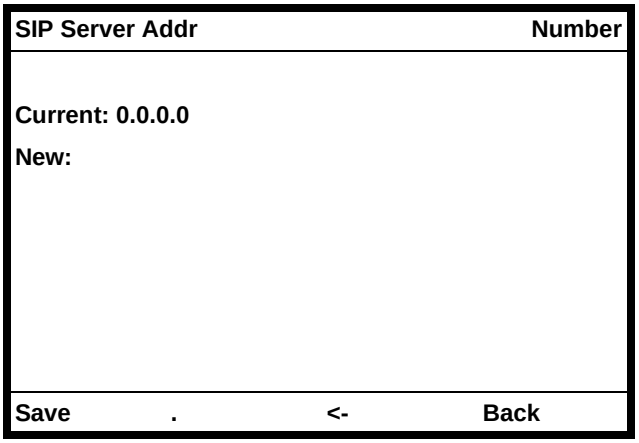
Table 54 LCD Menu: SIP Server Address

LABEL	DESCRIPTION
Current	This shows the IP address of the SIP server already configured for this account.
Edit	Press this to enter the new IP address for this account's SIP server.
Back	Press this to return to the previous screen.

7.4.4.1 SIP Server Address - Edit

Press **Edit** in the **SIP Server Addr** screen. The following screen displays.

Figure 62 LCD Menu: SIP Server Address - Edit



The following table describes the labels in this screen.

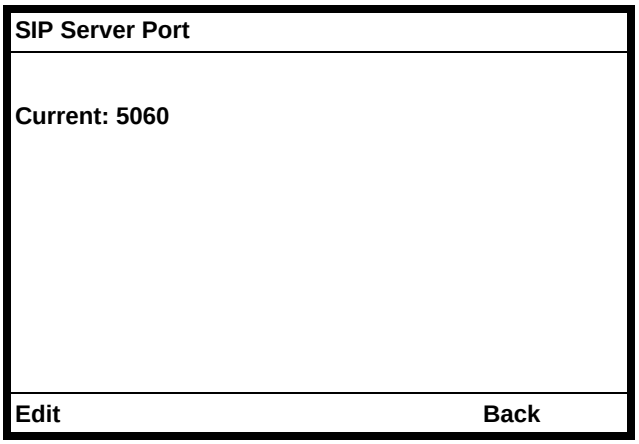
Table 55 LCD Menu: SIP Server Address - Edit

LABEL	DESCRIPTION
Current	This shows the IP address of the SIP server already configured for this account.
New	Enter the new IP address for this account's SIP server in dotted decimal notation.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.5 SIP Server Port

Use this screen to see and edit the port on the this account's SIP server used for SIP calls. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > SIP Server Port**. The following screen displays.

Figure 63 LCD Menu: SIP Server Port



The following table describes the labels in this screen.

Table 56 LCD Menu: SIP Server Port

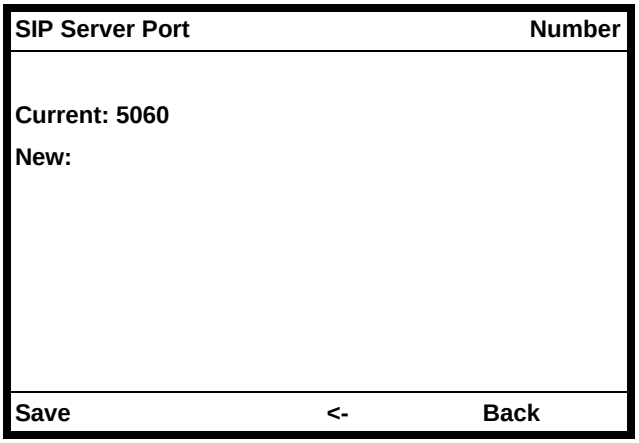
LABEL	DESCRIPTION
Current	This shows the SIP server port number already configured for this account.
Edit	Press this to enter the new SIP server port number for this account.
Back	Press this to return to the previous screen.

Note: Make no changes in this screen unless your service provider told you to.

7.4.5.1 SIP Server Port - Edit

Press **Edit** in the **SIP Server Port** screen. The following screen displays.

Figure 64 LCD Menu: SIP Server Port - Edit



The following table describes the labels in this screen.

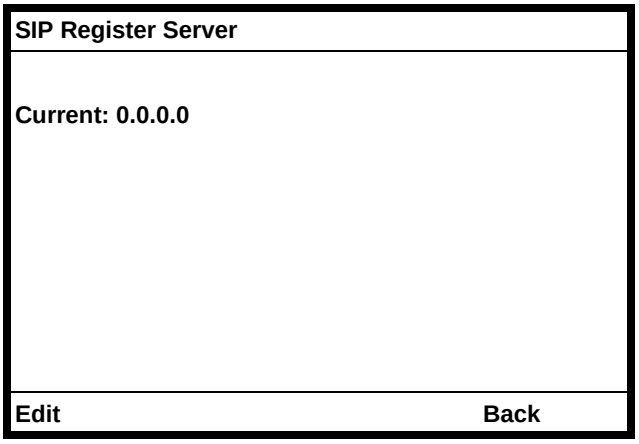
Table 57 LCD Menu: SIP Server Port - Edit

LABEL	DESCRIPTION
Current	This shows the SIP server port number already configured for this account.
New	Enter the new server port number for this account (from 1024 to 65535).
Mode	Cycle through different character input modes using the **#** key. Note: The port number can consist of numerals (0 ~ 9) only.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.6 SIP Register Server

Use this menu to see and edit the IP address of the server your service provider uses to register the V500 for this account (also known as a registrar server). Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > SIP Register Server**. The following screen displays.

Figure 65 LCD Menu: SIP Register Server



The following table describes the labels in this screen.

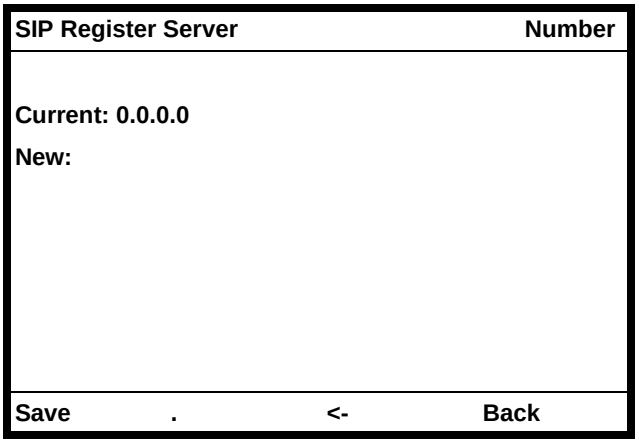
Table 58 LCD Menu: SIP Register Server Address

LABEL	DESCRIPTION
Current	This shows the IP address of the SIP registrar server already configured for this account.
Edit	Press this to enter the new IP address for this account's SIP registrar server.
Back	Press this to return to the previous screen.

7.4.6.1 SIP Register Server - Edit

Press **Edit** in the **SIP Register Server** screen. The following screen displays.

Figure 66 LCD Menu: SIP Register Server Address - Edit



The following table describes the labels in this screen.

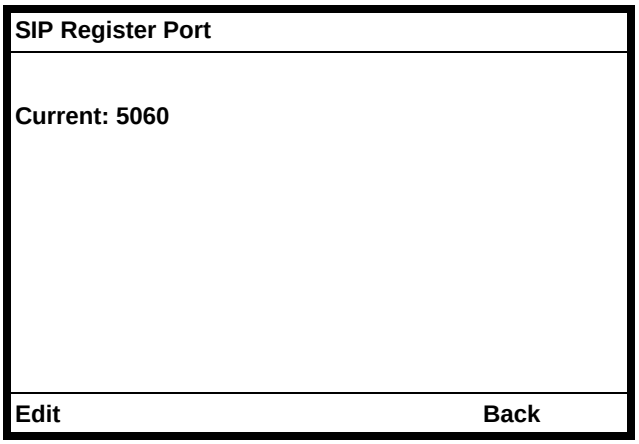
Table 59 LCD Menu: SIP Register Server Address - Edit

LABEL	DESCRIPTION
Current	This shows the IP address of the SIP register server already configured for this account.
New	Enter the new IP address for this account's SIP register server in dotted decimal notation.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.7 SIP Register Port

Use this screen to see and edit the listening port on the SIP registrar server for calls from this account. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > SIP Register Port**. The following screen displays.

Figure 67 LCD Menu: SIP Register Port



The following table describes the labels in this screen.

Table 60 LCD Menu: SIP Register Port

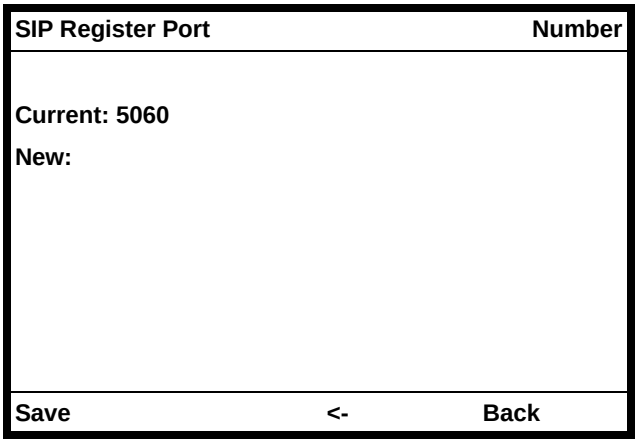
LABEL	DESCRIPTION
Current	This shows the SIP registrar port number already configured for this account.
Edit	Press this to enter the new SIP registrar port number for this account.
Back	Press this to return to the previous screen.

Note: Make no changes in this screen unless your service provider told you to.

7.4.7.1 SIP Register Port - Edit

Press **Edit** in the **SIP Register Port** screen. The following screen displays.

Figure 68 LCD Menu: SIP Register Port - Edit



The following table describes the labels in this screen.

Table 61 LCD Menu: SIP Register Port - Edit

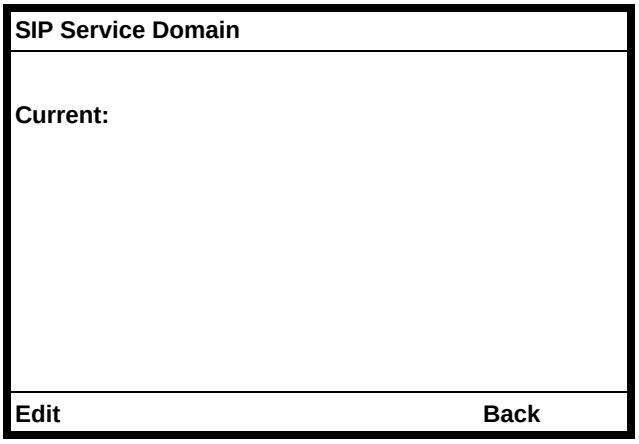
LABEL	DESCRIPTION
Current	This shows the SIP register port number already configured for this account.
New	Enter the new register port number for this account (from 1024 to 65535).
Mode	Cycle through different character input modes using the **#** key. Note: The port number can consist of numerals (0 ~ 9) only.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.8 SIP Service Domain

Use this to see and edit the SIP service domain configured for this SIP account. The SIP service domain of the VoIP service provider (the company that lets you make phonecalls over the Internet) is the domain name in a SIP URI. For example, if the SIP address is “1122334455@voip-provider.com”, then “voip-provider.com” is the SIP service domain.

Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > SIP Service Domain**. The following screen displays.

Figure 69 LCD Menu: SIP Service Domain



The following table describes the labels in this screen.

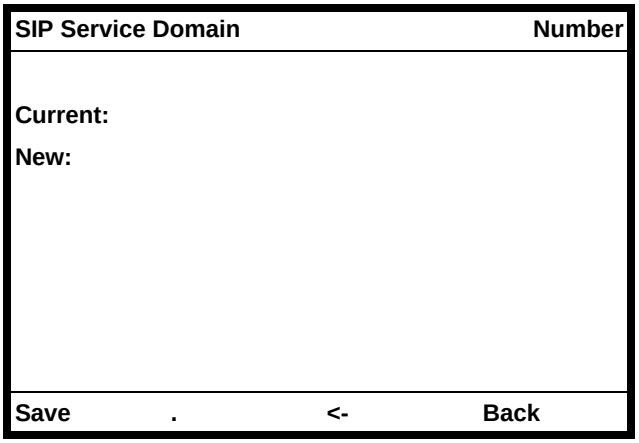
Table 62 LCD Menu: SIP Service Domain

LABEL	DESCRIPTION
Current	This shows the SIP service domain already configured for this account.
Edit	Press this to enter the new SIP service domain for this account.
Back	Press this to return to the previous screen.

7.4.8.1 SIP Service Domain - Edit

Press **Edit** in the **SIP Service Domain** screen. The following screen displays.

Figure 70 LCD Menu: SIP Service Domain - Edit



The following table describes the labels in this screen.

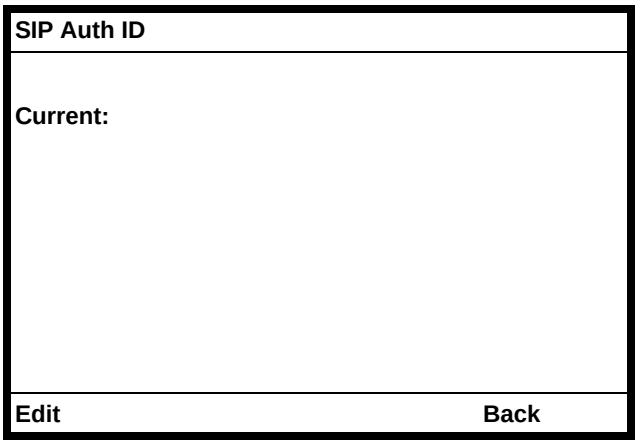
Table 63 LCD Menu: SIP Service Domain - Edit

LABEL	DESCRIPTION
Current	This shows the SIP service domain already configured for this account.
New	Enter the new SIP service domain for this account. If you have a SIP account like “1234567@voip-provider.com”, the SIP service domain is “voip-provider.com”.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.9 SIP Authentication ID

A SIP account's authentication ID is its username. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > SIP Auth ID** to see and edit the SIP authentication ID for this SIP account. The following screen displays.

Figure 71 LCD Menu: SIP Authentication ID



The following table describes the labels in this screen.

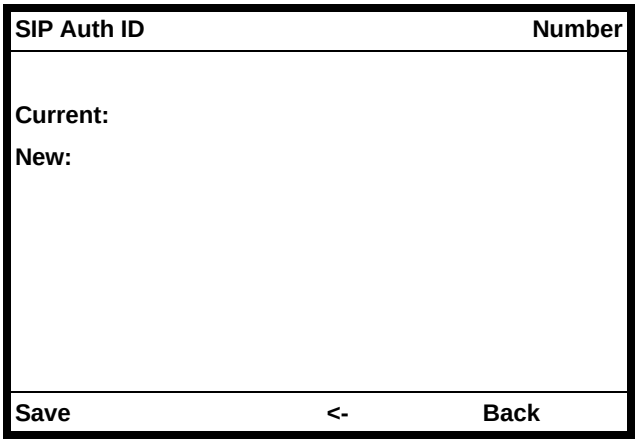
Table 64 LCD Menu: SIP Authentication ID

LABEL	DESCRIPTION
Current	This shows the SIP authentication ID already configured for this account.
Edit	Press this to enter the new SIP authentication ID for this account.
Back	Press this to return to the previous screen.

7.4.9.1 SIP Authentication ID - Edit

Press **Edit** in the **SIP Auth ID** screen. The following screen displays.

Figure 72 LCD Menu: SIP Authentication ID - Edit



The following table describes the labels in this screen.

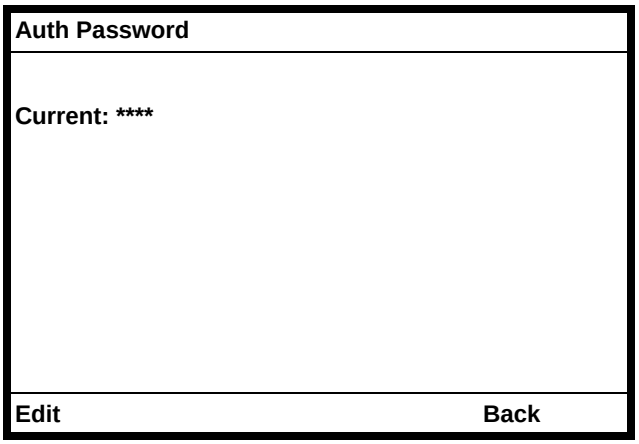
Table 65 LCD Menu: SIP Authentication ID - Edit

LABEL	DESCRIPTION
Current	This shows the SIP authentication ID already configured for this account.
New	Enter the new SIP authentication ID for this account.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.4.10 Authentication Password

Use this screen to see and edit the password for this SIP account. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > Auth Password**. The following screen displays.

Figure 73 LCD Menu: Authentication Password



The following table describes the labels in this screen.

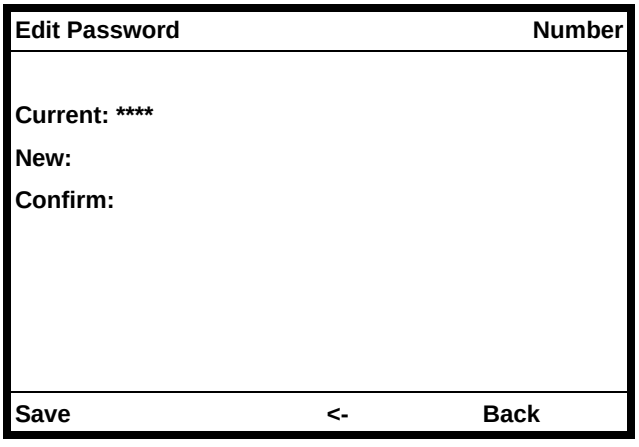
Table 66 LCD Menu: Authentication Password

LABEL	DESCRIPTION
Current	This shows the password already configured for this account.
Edit	Press this to enter the new password for this account.
Back	Press this to return to the previous screen.

7.4.10.1 Authentication Password - Edit

Press **Edit** in the **Auth Password** screen. The following screen displays.

Figure 74 LCD Menu: Authentication Password - Edit



The following table describes the labels in this screen.

Table 67 LCD Menu: Authentication Password - Edit

LABEL	DESCRIPTION
Current	This shows the SIP authentication ID already configured for this account. Each asterisk (*****) represents one character of the password configured on the V500.
New	Enter the new password for this account.
Confirm	Re-enter the new password.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

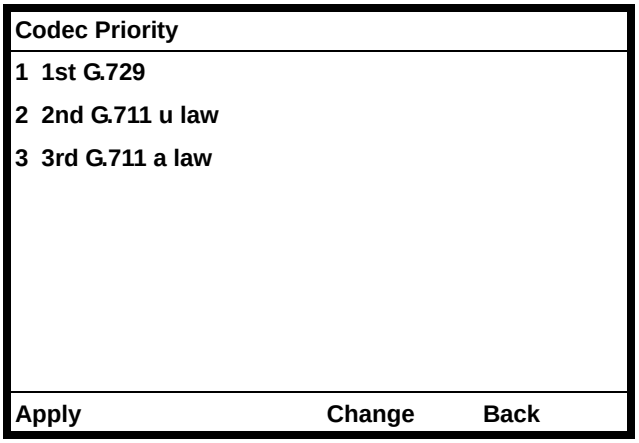
7.4.11 Codec Priority

When the V500 makes a SIP call, it negotiates the voice codec (coder / decoder) it uses for the call with the SIP server. Both devices must be able to use the same codec. You can set two codecs for the V500 to use. If the SIP server cannot use the first codec you set, the V500 tries to use the second codec. If the SIP server can use neither the first codec nor the second, the V500 tries to use the third.

Note: Make no changes in this screen unless your service provider told you to.

Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration** > **Codec Priority**. The following screen displays.

Figure 75 LCD Menu: Codec Selection

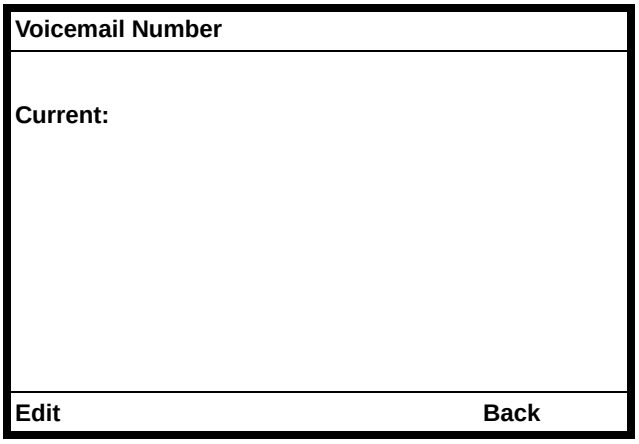


Press Change to cycle through the available codecs. Press **Apply** to save your changes and return to the previous menu, or press **Back** to return to the previous menu without saving. See the section on voice coding and decoding in the web configurator section for information on each of the codecs.

7.4.12 Voicemail Number

Use this screen to see and edit the number your V500 uses to access voicemail for this SIP account. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > Voicemail Number**. The following screen displays.

Figure 76 LCD Menu: Voicemail Number



The following table describes the labels in this screen.

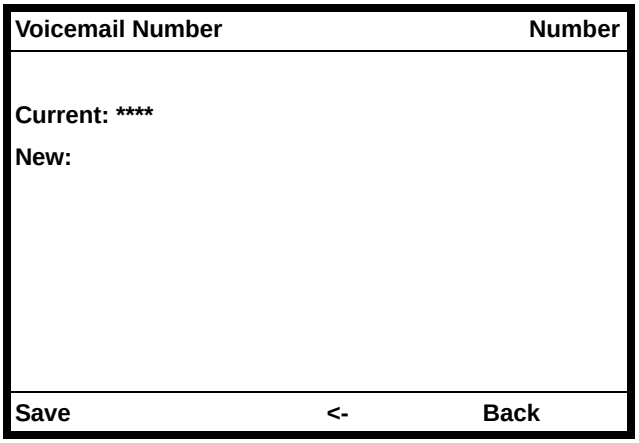
Table 68 LCD Menu: Voicemail Number

LABEL	DESCRIPTION
Current	This shows the voicemail number already configured for this account.
Edit	Press this to enter the new voicemail number for this account.
Back	Press this to return to the previous screen.

7.4.12.1 Voicemail Number - Edit

Press **Edit** in the **Voicemail Number** screen. The following screen displays.

Figure 77 LCD Menu: Voicemail Number - Edit



The following table describes the labels in this screen.

Table 69 LCD Menu: Voicemail Number - Edit

LABEL	DESCRIPTION
Current	This shows the voicemail number already configured for this account.
New	Enter the new voicemail number for this account.
Confirm	Re-enter the new password.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Cancel	Press this to return to the previous screen without saving your settings.

7.4.13 DNS SRV / DNS

DNS (Domain Name System) allows your V500 to resolve a domain name (like www.zyxel.com) to an IP address (like 203.160.232.7). If you do not use a DNS server, you cannot use domain names (when configuring a SIP account, for example); you must use IP addresses instead.

Turn **DNS SRV / DNS** on (**On**) to use the DNS servers you either get via DHCP or set up manually in the **Advanced Setting** > **Network Setting** > **Static IP** menu. Turn **DNS SRV / DNS** off (**Off**) to use no DNS server.

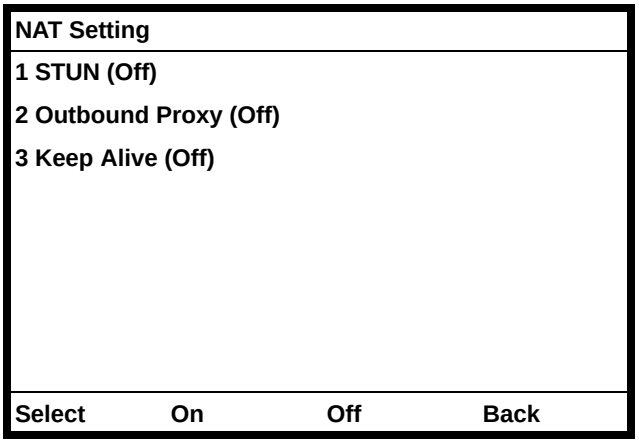
7.4.14 Call ID

Turn this **On** to have the V500 send caller ID for outgoing calls. The person you call can tell who is calling. Turn this **Off** if you want the V500 not to send caller ID.

7.4.15 NAT Setting

Use these menus to configure NAT (Network Address Translation) on the V500. See Section on page 218 for more information. Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > NAT Setting**. The following screen displays.

Figure 78 LCD Menu: NAT Setting

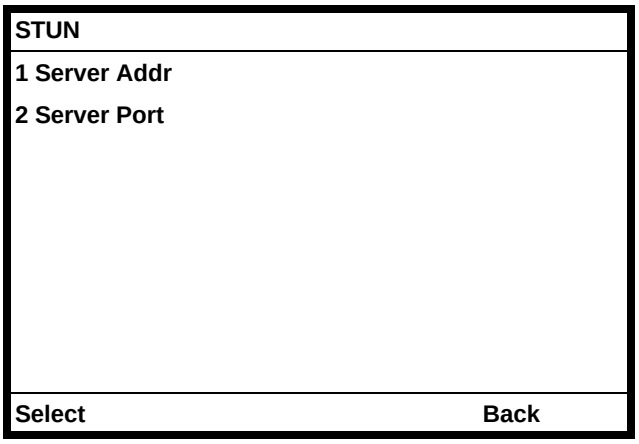


- Enable and select **STUN** to configure Simple Traversal of User Datagram Protocol (UDP) through Network Address Translators. STUN lets the V500 get NAT information automatically from a STUN server.
- Enable and select **Outbound Proxy** if you have an outbound proxy server.
- Enable **Keep Alive** to stop NAT routers between the V500 and the SIP server from dropping the SIP session.

7.4.15.1 STUN

Use this menu to have the V500 get NAT information automatically from a STUN server. Enable and select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > NAT Setting** > **STUN**. The following screen displays.

Figure 79 LCD Menu: STUN



The following table describes the labels in this screen.

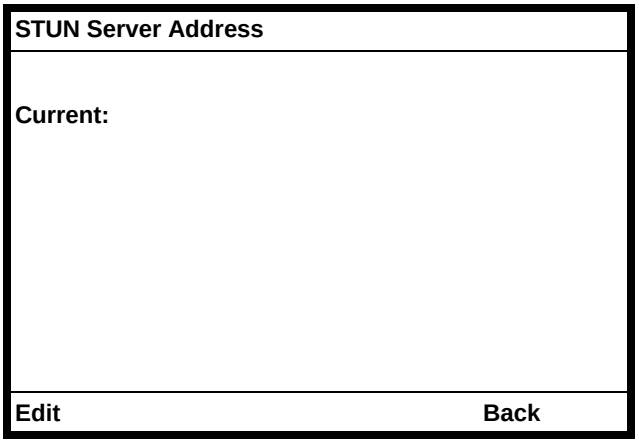
Table 70 LCD Menu: STUN

LABEL	DESCRIPTION
Server Addr	Select this to see or edit the STUN server's IP address or domain name.
Server Port	Select this to see or edit the STUN server's listening port.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

7.4.15.1.1 STUN Server Address

Use this menu to see or edit the IP address of the STUN server you want to use. Enable and select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > NAT Setting** > **Server Addr**. The following screen displays.

Figure 80 LCD Menu: STUN Server Address



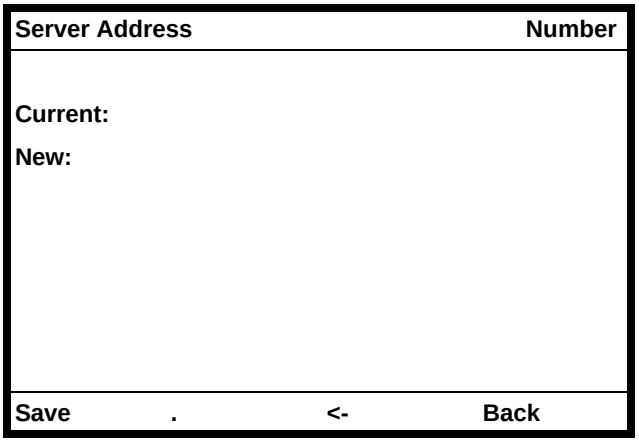
The following table describes the labels in this screen.

Table 71 LCD Menu: STUN Server Address

LABEL	DESCRIPTION
Current	This shows the STUN server address already configured for this account.
Edit	Press this to enter the new STUN server address.
Back	Press this to return to the previous screen.

Press **Edit** in the **STUN Server Address** screen. The following screen displays.

Figure 81 LCD Menu: STUN Server Address - Edit



The following table describes the labels in this screen.

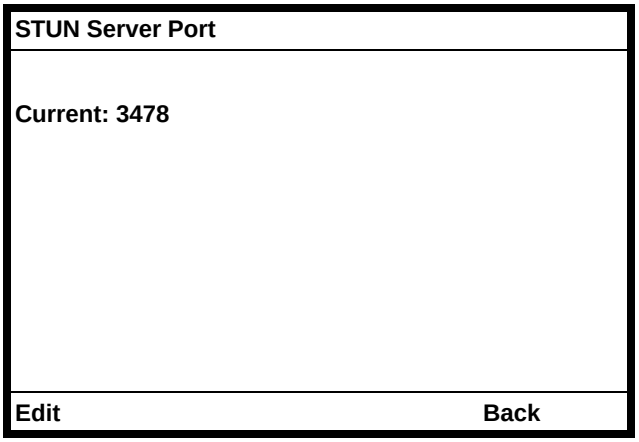
Table 72 LCD Menu: STUN Server Address - Edit

LABEL	DESCRIPTION
Current	This shows the STUN server address already configured for this account.
New	Enter the new STUN server address for this account.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.15.1.2 STUN Server Port

Use this menu to see or edit the port number on the STUN server. Enable and select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > NAT Setting** > **STUN** > **Server Port**. The following screen displays.

Figure 82 LCD Menu: STUN Server Port



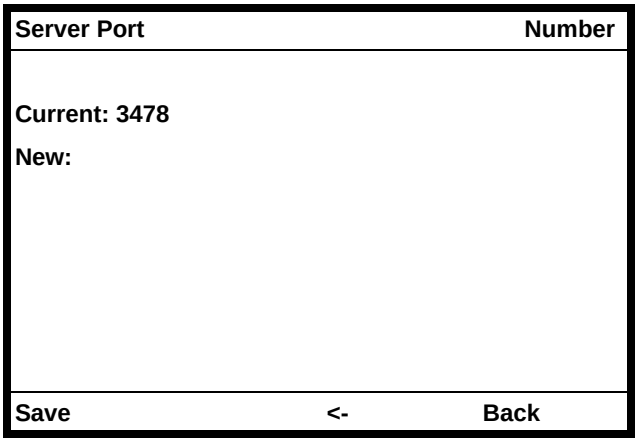
The following table describes the labels in this screen.

Table 73 LCD Menu: STUN Server Port

LABEL	DESCRIPTION
Current	This shows the listening port on the STUN server already configured for this account.
Edit	Press this to enter the new STUN server listening port.
Back	Press this to return to the previous screen.

Press **Edit** in the **STUN Server Port** screen. The following screen displays.

Figure 83 LCD Menu: STUN Server Port - Edit



The following table describes the labels in this screen.

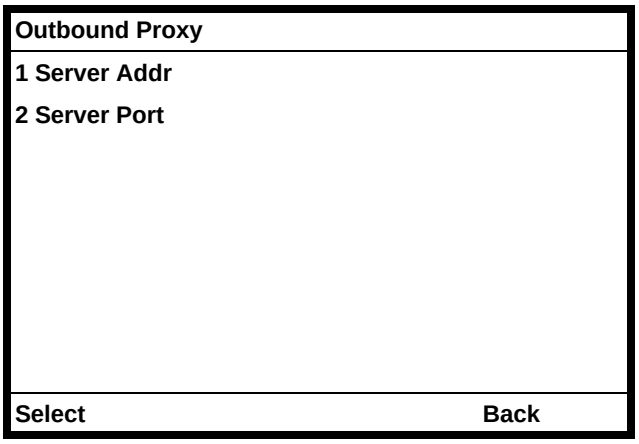
Table 74 LCD Menu: STUN Server Port - Edit

LABEL	DESCRIPTION
Current	This shows the listening port on the STUN server already configured for this account.
New	Enter the new listening port on the STUN server.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.15.2 Outbound Proxy

Use this menu to have the V500 use an outbound proxy server. Enable and select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > NAT Setting** > **Outbound Proxy**. The following screen displays.

Figure 84 LCD Menu: Outbound Proxy



The following table describes the labels in this screen.

Table 75 LCD Menu: Outbound Proxy

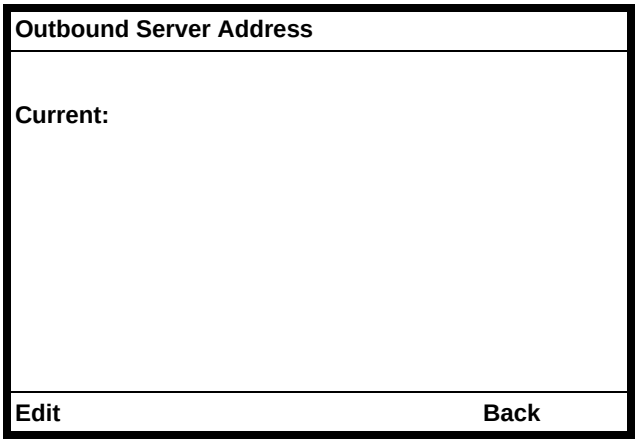
LABEL	DESCRIPTION
Server Addr	Select this to see or edit the outbound proxy server's IP address or domain name.
Server Port	Select this to see or edit the outbound proxy server's listening port.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

7.4.15.2.1 Outbound Proxy Server Address

Use this menu to see or edit the IP address of the outbound proxy server you want to use. Enable and select **Advanced Setting > SIP Configuration > SIP (1 ~**

4) Configuration > NAT Setting > **Outbound Proxy** > **Server Addr**. The following screen displays.

Figure 85 LCD Menu: Outbound Proxy Server Address



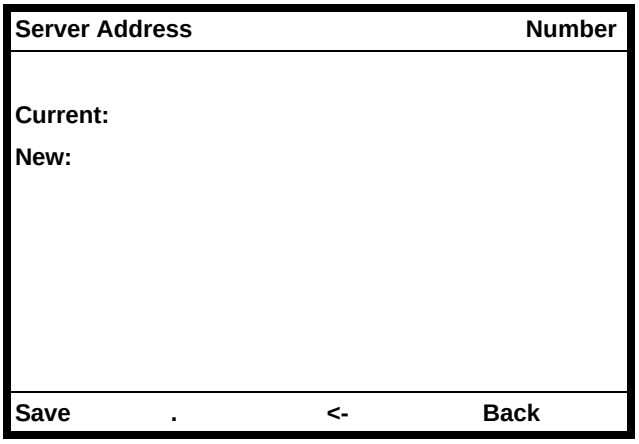
The following table describes the labels in this screen.

Table 76 LCD Menu: Outbound Proxy Server Address

LABEL	DESCRIPTION
Current	This shows the outbound proxy server address already configured for this account.
Edit	Press this to enter the new outbound proxy server address.
Back	Press this to return to the previous screen.

Press **Edit** in the **Outbound Proxy Server Address** screen. The following screen displays.

Figure 86 LCD Menu: Outbound Proxy Server Address - Edit



The following table describes the labels in this screen.

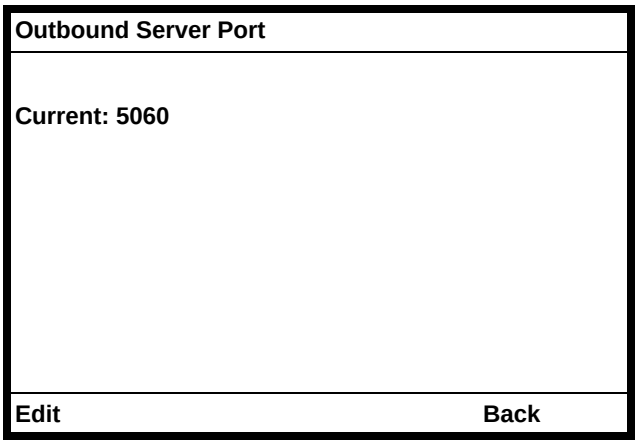
Table 77 LCD Menu: Outbound Proxy Server Address - Edit

LABEL	DESCRIPTION
Current	This shows the Outbound Proxy server address already configured for this account.
New	Enter the new Outbound Proxy server address for this account.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.15.2.2 Outbound Proxy Server Port

Use this menu to see or edit the port number on the outbound proxy server. Enable and select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > NAT Setting** > **Outbound Proxy** > **Server Port**. The following screen displays.

Figure 87 LCD Menu: Outbound Proxy Server Port



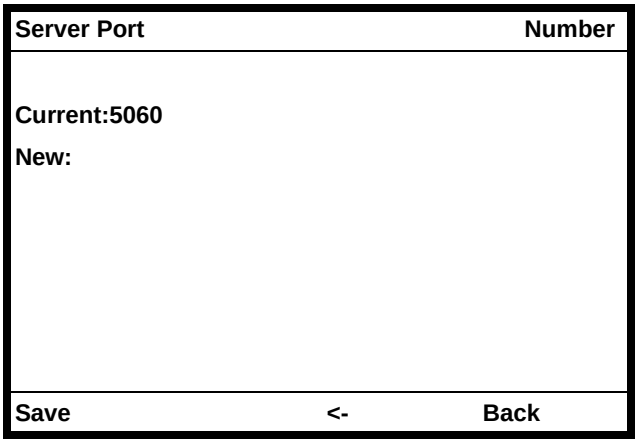
The following table describes the labels in this screen.

Table 78 LCD Menu: Outbound Proxy Server Port

LABEL	DESCRIPTION
Current	This shows the listening port on the Outbound Proxy server already configured for this account.
Edit	Press this to enter the new Outbound Proxy server listening port.
Back	Press this to return to the previous screen.

Press **Edit** in the **Outbound Proxy Server Port** screen. The following screen displays.

Figure 88 LCD Menu: Outbound Proxy Server Port - Edit



The following table describes the labels in this screen.

Table 79 LCD Menu: Outbound Proxy Server Port - Edit

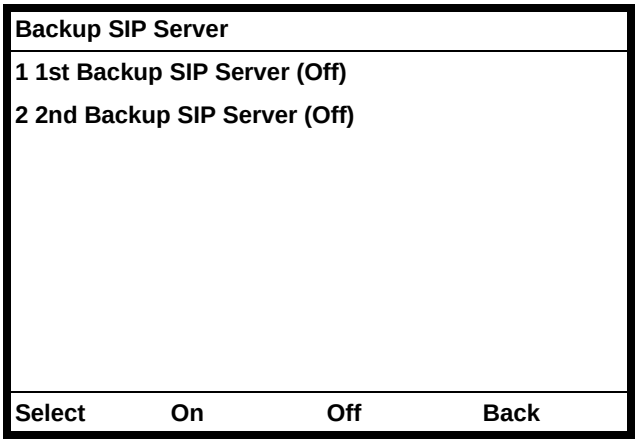
LABEL	DESCRIPTION
Current	This shows the listening port on the Outbound Proxy server already configured for this account.
New	Enter the new listening port on the Outbound Proxy server.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.4.16 Backup SIP Server (1 and 2)

Use these menus to configure the details of up to two SIP servers that the V500 uses to make calls in the event that the primary SIP server is unavailable. If the primary SIP server is unavailable, the V500 uses the 1st backup SIP server (if configured). If the primary SIP server and the 1st backup SIP server are unavailable, the V500 uses the 2nd backup SIP server (if configured).

Select **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > Backup SIP Server**. The following screen displays.

Figure 89 LCD Menu: Backup SIP Server



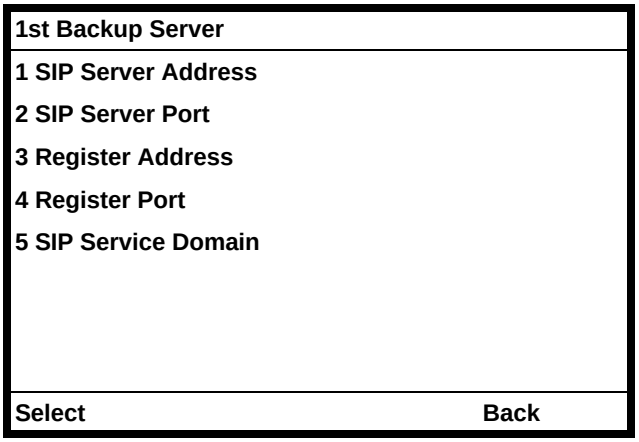
Enable and select the backup SIP server you want to configure, or press **Back** to return to the previous screen.

7.4.16.1 First / Second Backup Server

Use these screens to configure details of the backup SIP server(s).

Enable and select **1st Backup SIP Server** or **2nd Backup SIP Server** in the **Advanced Setting > SIP Configuration > SIP (1 ~ 4) Configuration > Backup SIP Server** menu (use **1st backup SIP Server** first). A screen similar to the following displays (this example uses the **1st backup SIP Server** screen).

Figure 90 LCD Menu: First / Second Backup SIP Server



The following table describes the labels in this screen.

Table 80 LCD Menu: First / Second Backup SIP Server

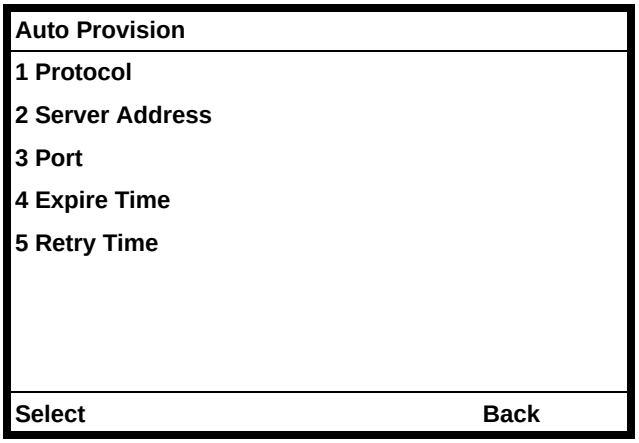
LABEL	DESCRIPTION
SIP Server Address	This is the IP address of the backup SIP server. See Section 7.4.4 on page 129 for information on how to configure this.
SIP Server Port	This is the listening port on the backup SIP server. See Section 7.4.5 on page 131 for information on how to configure this.
Register Address	This is the IP address of the backup SIP register server. See Section 7.4.6 on page 133 for information on how to configure this.
Register Port	This is the listening port on the backup SIP register server. See Section 7.4.7 on page 135 for information on how to configure this.
SIP Server Domain	This is for domain name of the backup SIP server. See Section 7.4.8 on page 137 for information on how to configure this.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

7.5 The Auto Provision Menus

Use these menus if you have an auto-provisioning server on the network. When auto-provisioning is used, the V500 downloads its settings automatically from the auto-provisioning server, meaning you do not have to input them manually.

Enable and select **Advanced Setting** > **Auto Provision**. The following screen appears.

Figure 91 LCD Menu: Auto Provision



The following table describes the labels in this screen.

Table 81 LCD Menu: Auto Provision

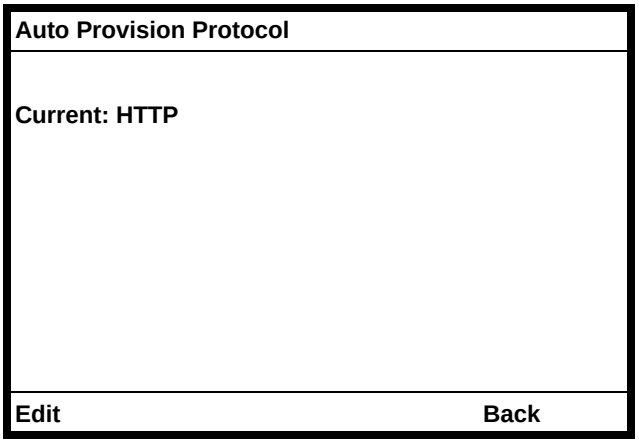
LABEL	DESCRIPTION
Protocol	Select this to see or edit the protocol the V500 uses to request and receive auto-provisioning files.
Server Address	Select this to see or edit the auto provisioning server's IP address.
Port	Select this to see or edit the auto-provisioning server's port number.
Expire Time	Select this to see or edit how long the V500 waits after it successfully receives an auto-provisioning file before it requests another.
Retry Time	Select this to see or edit how long the V500 waits, if it requests an auto-provisioning file but does not receive one, before requesting the file again.
Select	Press this to choose the highlighted entry in the menu.
Back	Press this to return to the previous screen without saving your settings.

7.5.1 Protocol

Use this screen to see or edit the protocol that the V500 uses to request and receive the auto-provisioning file. This protocol must be the same as that used by the auto-provisioning server.

Enable and select **Advanced Setting** > **Auto Provision** > **Protocol**. The following screen displays.

Figure 92 LCD Menu: Auto Provision Protocol



The following table describes the labels in this screen.

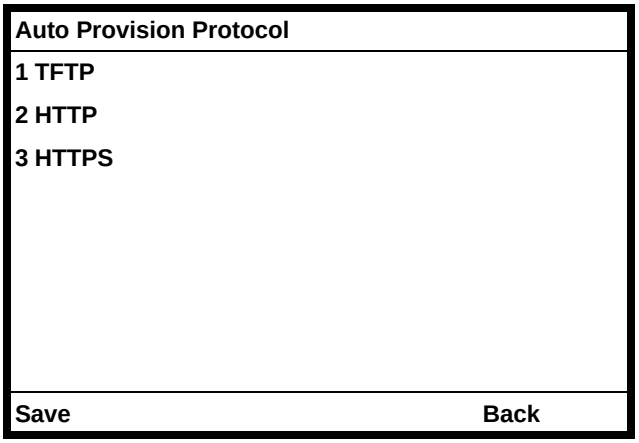
Table 82 LCD Menu: Auto Provision Protocol

LABEL	DESCRIPTION
Current	This shows the auto-provision protocol already configured on the V500.
Edit	Press this to change the auto-provision protocol. Note: The V500 must use the same protocol as the auto-provisioning server.
Back	Press this to return to the previous screen.

7.5.1.1 Auto Provision Protocol - Edit

Press **Edit** in the **Auto Provision Protocol** screen. The following screen displays.

Figure 93 LCD Menu: Auto Provision Protocol - Edit



The following table describes the labels in this screen.

Table 83 LCD Menu: Auto Provision Protocol - Edit

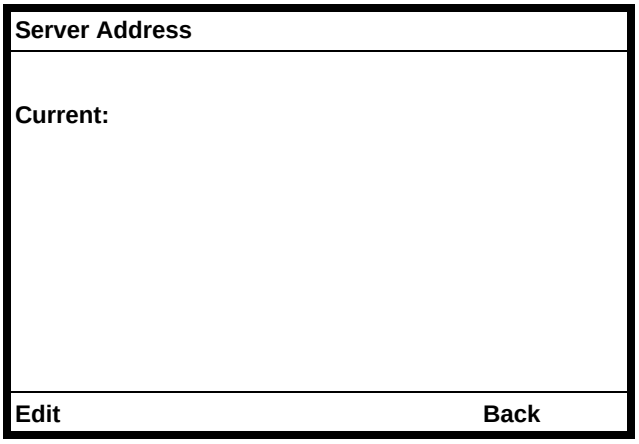
LABEL	DESCRIPTION
TFTP	Select this to use Trivial File Transfer Protocol.
HTTP	Select this to use Hyper-Text Transfer Protocol.
HTTPS	Select this to use secured HTTP.
Save	Press this to save your changes.
Back	Press this to return to the previous screen.

7.5.2 Auto-provisioning Server Address

Use this screen to see or edit the IP address of the auto-provisioning server from which the V500 gets the auto-provisioning file.

Enable and select **Advanced Setting** > **Auto Provision** > **Server Address**. The following screen displays.

Figure 94 LCD Menu: Auto Provision Server Address



The following table describes the labels in this screen.

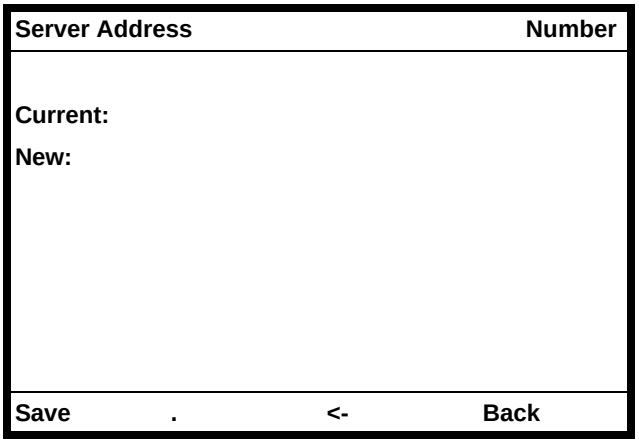
Table 84 LCD Menu: Auto Provision Server Address

LABEL	DESCRIPTION
Current	This shows the auto-provisioning server IP address already configured on the V500.
Edit	Press this to change the server address.
Back	Press this to return to the previous screen.

7.5.2.1 Auto-provisioning Server Address - Edit

Press **Edit** in the **Server Address** screen. The following screen displays.

Figure 95 LCD Menu: Auto Provision Server Address - Edit



The following table describes the labels in this screen.

Table 85 LCD Menu: Auto Provision Server Address - Edit

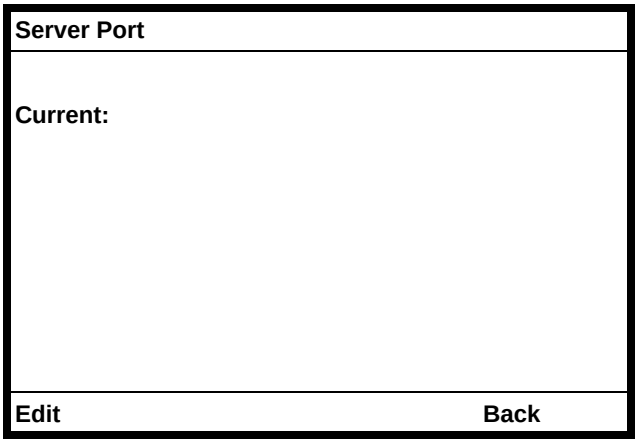
LABEL	DESCRIPTION
Current	This shows the auto-provisioning server IP address already configured on the V500.
New	Enter the IP address from which you want the V500 to get the auto-provisioning file.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
.	Press this to enter a period.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.5.3 Auto-provisioning Server Port

Use this screen to see or edit the listening port of the auto-provisioning server from which the V500 gets the auto-provisioning file.

Enable and select **Advanced Setting** > **Auto Provision** > **Port**. The following screen displays.

Figure 96 LCD Menu: Auto Provision Server Port



The following table describes the labels in this screen.

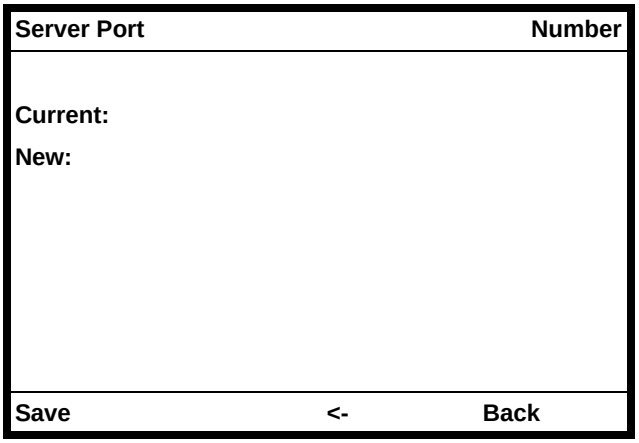
Table 86 LCD Menu: Auto Provision Server Address

LABEL	DESCRIPTION
Current	This shows the auto-provisioning server's listening port number already configured on the V500.
Edit	Press this to change the server port number.
Back	Press this to return to the previous screen.

7.5.3.1 Auto-provisioning Server Port - Edit

Press **Edit** in the **Server Port** screen. The following screen displays.

Figure 97 LCD Menu: Auto Provision Server Port - Edit



The following table describes the labels in this screen.

Table 87 LCD Menu: Auto Provision Server Port - Edit

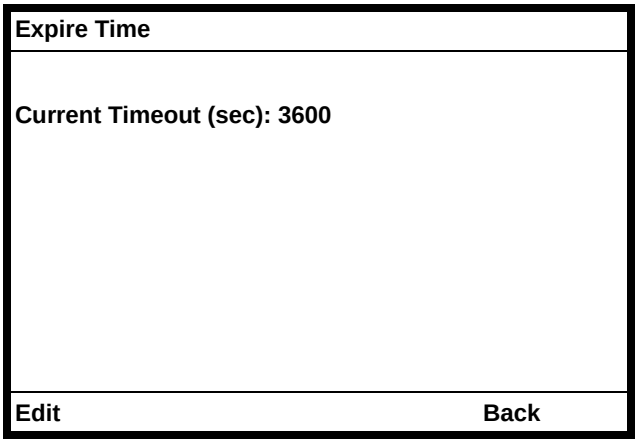
LABEL	DESCRIPTION
Current	This shows the auto-provisioning server's listening port number already configured on the V500.
New	Enter the new listening port number.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.5.4 Expire Time

Use this screen to see or edit the length of time the V500 waits after receiving an auto-provisioning file before it requests another.

Enable and select **Advanced Setting** > **Auto Provision** > **Expire Time**. The following screen displays.

Figure 98 LCD Menu: Auto Provision Expire Time



The following table describes the labels in this screen.

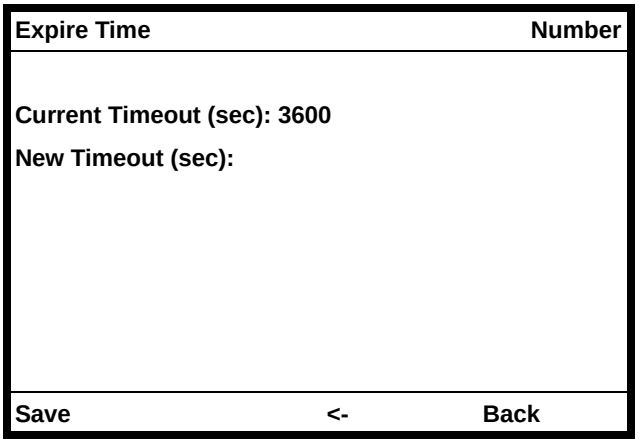
Table 88 LCD Menu: Auto Provision Expire Time

LABEL	DESCRIPTION
Current Timeout	This shows the expire time already configured on the V500.
Edit	Press this to change the expire time.
Back	Press this to return to the previous screen.

7.5.4.1 Expire Time - Edit

Press **Edit** in the **Expire Time** screen. The following screen displays.

Figure 99 LCD Menu: Auto Provision Expire Time - Edit



The following table describes the labels in this screen.

Table 89 LCD Menu: Auto Provision Expire Time - Edit

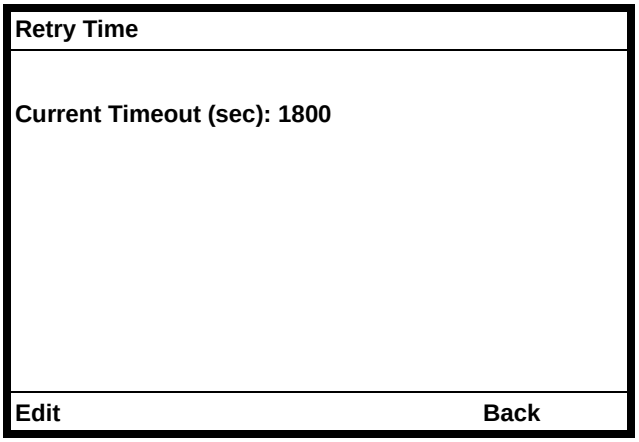
LABEL	DESCRIPTION
Current Timeout	This shows the expire time already configured on the V500.
New Timeout	Enter the new expire time.
Mode	Cycle through different character input modes using the **#** key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.5.5 Retry Time

Use this screen to see or edit the length of time the V500 waits if it cannot get an auto-provisioning file from the server before trying again.

Enable and select **Advanced Setting** > **Auto Provision** > **Retry Time**. The following screen displays.

Figure 100 LCD Menu: Auto Provision Retry Time



The following table describes the labels in this screen.

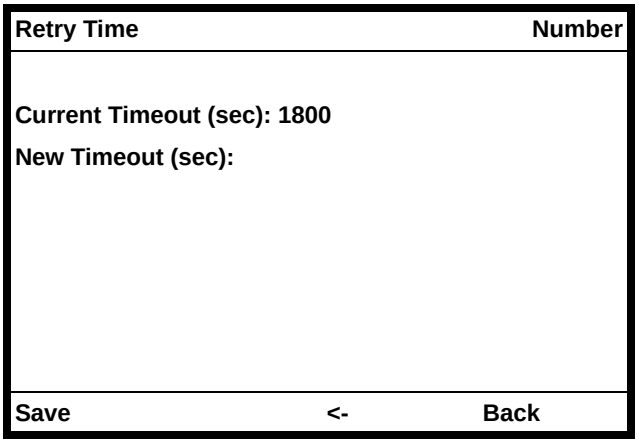
Table 90 LCD Menu: Auto Provision Retry Time

LABEL	DESCRIPTION
Current Timeout	This shows the retry time already configured on the V500.
Edit	Press this to change the retry time.
Back	Press this to return to the previous screen.

7.5.5.1 Retry Time - Edit

Press **Edit** in the **Retry Time** screen. The following screen displays.

Figure 101 LCD Menu: Auto Provision Retry Time - Edit



The following table describes the labels in this screen.

Table 91 LCD Menu: Auto Provision Expire Time - Edit

LABEL	DESCRIPTION
Current Timeout	This shows the retry time already configured on the V500.
New Timeout	Enter the new retry time.
Mode	Cycle through different character input modes using the # key.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.6 Programmable Key

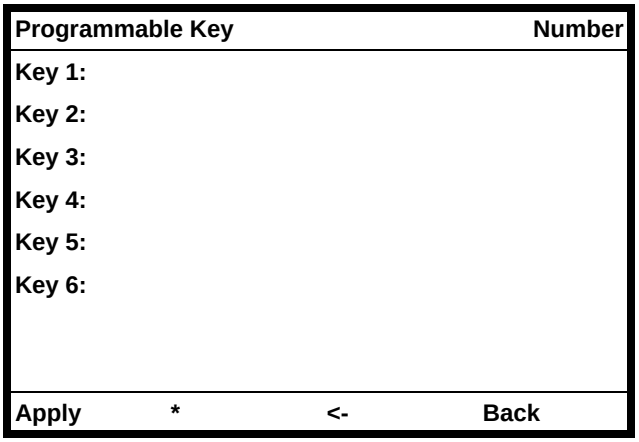
The V500 has six custom keys (see Section 2.2 on page 35 for hardware information). You can configure these keys to perform call functions. For example, if you can turn off caller ID on the next call by dialing "*12*" on the alphanumeric keypad, you can configure a custom key to do the same thing whenever you press it.

Note: The features available depend on your service provider.

Refer to information supplied by your service provider to see what features are available to you, and the codes you enter to use them.

Select **Advanced Setting** > **Programmable Key**. The following screen displays.

Figure 102 LCD Menu: Programmable Feature Key



The following table describes the labels in this screen.

Table 92 LCD Menu: Programmable Key

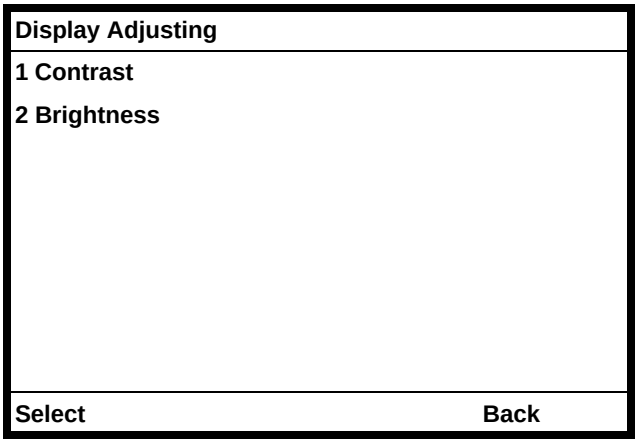
LABEL	DESCRIPTION
Key 1 ~ Key 6	These show the feature code configured for each rule. Note: The rules in this screen are in the same order as the custom keys on the V500. **Key 1** refers to the top key, **Key 2** refers to the second-from-top key, and so on. Note: To edit a **Key**, simply select it and then enter the desired feature number.
*	Enter an asterisk in a **Key** line.
<-	Press this to delete a character.
Apply	Press this to save an edited key.
Back	Press this to return to the previous screen.

7.7 Display Adjusting

Use this menu to change the way the LCD screen displays. You can change the screen's brightness and contrast levels.

Select **Advanced Setting** > **Display Adjusting**. The following screen displays.

Figure 103 LCD Menu: Display Adjusting



The following table describes the labels in this screen.

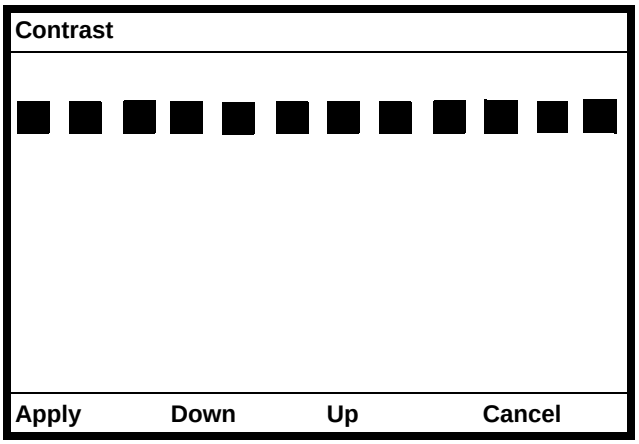
Table 93 LCD Menu: Display Adjusting

LABEL	DESCRIPTION
Contrast	Select this to change the LCD screen's contrast.
Brightness	Select this to change the LCD screen's brightness
Select	Press this to choose the highlighted entry in the menu.
Back	Press this to return to the previous screen without saving your settings.

7.7.1 Contrast

Use this menu to change the LCD screen's contrast (the difference between the text shade and the background shade). Select **Contrast** in the **Display Adjusting** menu. The following screen displays.

Figure 104 LCD Menu: Contrast



The following table describes the labels in this screen.

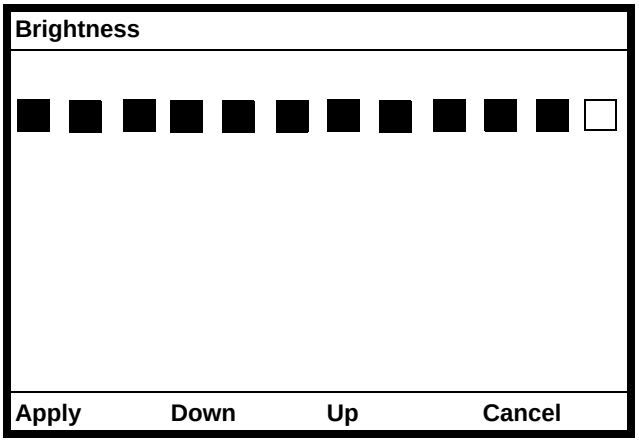
Table 94 LCD Menu: Contrast

LABEL	DESCRIPTION
Apply	Press this to save your settings.
Up	Press this to increase the contrast.
Down	Press this to decrease the contrast.
Cancel	Select this to return to the previous screen without saving your settings.

7.7.2 Brightness

Use this menu to change the LCD screen's brightness. Select **Brightness** in the **Display Adjusting** menu. The following screen displays.

Figure 105 LCD Menu: Brightness



The following table describes the labels in this screen.

Table 95 LCD Menu: Brightness

LABEL	DESCRIPTION
Apply	Press this to save your settings.
Up	Press this to increase the screen's brightness.
Down	Press this to decrease the screen's brightness.
Cancel	Select this to return to the previous screen without saving your settings.

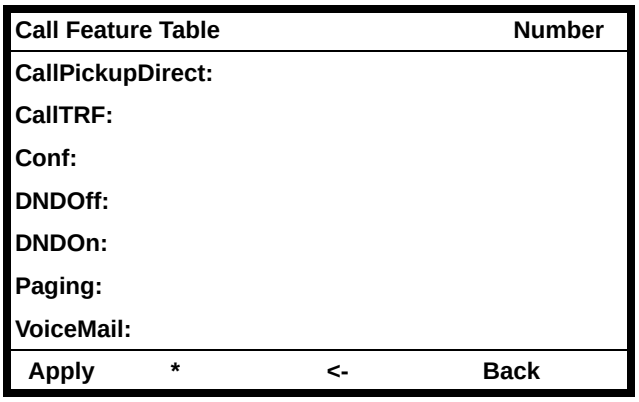
7.8 Call Feature Table

The V500 can supports a set of call feature services which depend on your agreement with your service provider. The features listed below are automatically configured by IP PBX's auto provisioning function. Each feature displays a corresponding code that maps to a button in the V500. If the features are not automatically configured, you can manually configure these IP-PBX-specific

setting codes to enable and disable the features. You should contact your service provider for the codes before configuration.

See Section 2.2 on page 35 for more information about the action and function keys. See Section 2.3 on page 41 for more information on how to use these keys.

Figure 106 LCD Menu: Call Feature Table



The following table describes the labels in this screen.

Table 96 LCD Menu: Call Feature Mode

LABEL	DESCRIPTION
CallPickupDirect	This is the code used to pick up calls for your extension from a different extension. The programmable key LED of the corresponding extension will blink quickly when the extension receives in incoming call. Press the programmable key number to pick it up.
CallTRF	This is the code used to transfer calls and it corresponds to the **TRANSFER** action key on the V500's front panel. It allows you to transfer an active call to a third party. For more information about transferring calls, refer to Chapter 2 on page 44.
Conf	This is the code used for conference calls and it corresponds to the **CONFERENCE** action key on the V500's front panel. It allows you to add a third party to an existing call. For more information about conference calls, refer to Chapter 2 on page 43.
DNDOff	This is the code used to turn the Do Not Disturb feature off for this extension.
DNDOn	This is the code used to turn the Do Not Disturb feature on for this extension.

Table 96 LCD Menu: Call Feature Mode

LABEL	DESCRIPTION
Paging	This is the code used to turn the paging feature on and off speakerphone for this extension. You can set up paging groups in the IP PBX. In paging feature, you can dial a number configured for a group of extensions. When you do this, each phone in the paging group goes into speakerphone mode automatically. See the User's Guide of your IP PBX for more information about paging groups.
VoiceMail	This is the code used to access voicemail on the V500. Press the **VOICE MAIL** key to check your voicemail message. For more information about voicemail, refer to Chapter 2 on page 43.
Apply	Press this to save your changes.
*	Press this to enter the * symbol.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

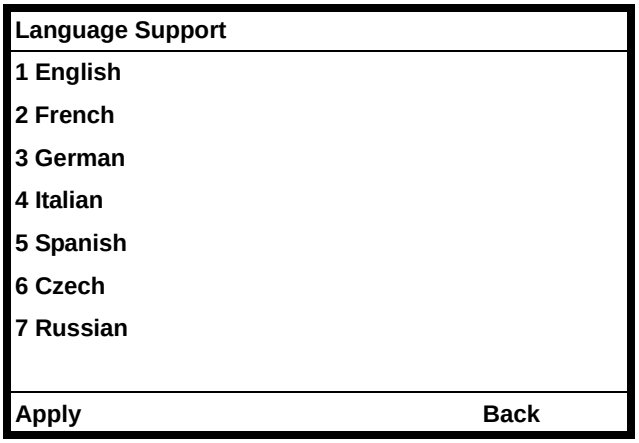
7.9 Language Support

Use this menu to select the language used on the V500's menus.

Select **Advanced Setting** > **Language Support**. The following screen displays.

Note: This setting does not apply to the Web Configurator.

Figure 107 LCD Menu: Language Support



The following table describes the labels in this screen.

Table 97 LCD Menu: Language Support

LABEL	DESCRIPTION
English ~ Russian	Select a language for the LCD menus.
Apply	Press this to save your settings.
Back	Press this to return to the previous screen.

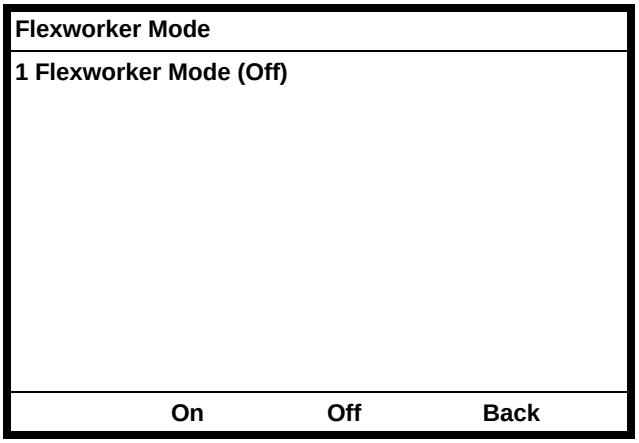
7.10 Flexworker Mode

Use this menu to turn Flexworker mode on or off.

The Flexworker feature allows you to “carry” your V500 settings with you when you change locations but are still using a compatible V500 phone.

Select **Advanced Setting** > **Flexworker Mode**. The following screen displays.

Figure 108 LCD Menu: Flexworker Mode



The following table describes the labels in this screen.

Table 98 LCD Menu: Flexworker Mode

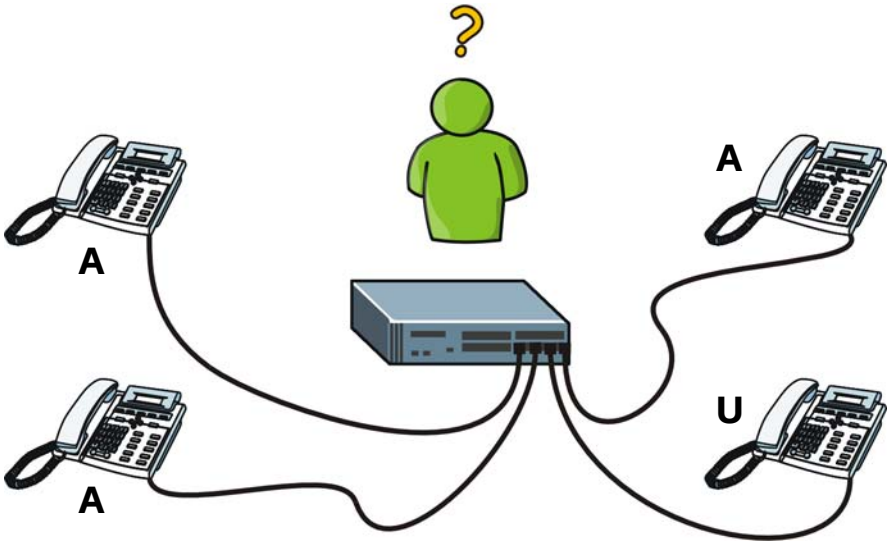
LABEL	DESCRIPTION
Flexworker Mode (On/ Off)	Set this to **On** if you want to enable Flexworker on both the phone and your account on the server or IP PBX.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Back	Press this to return to the previous screen.

7.10.1 Using Flexworker Mode

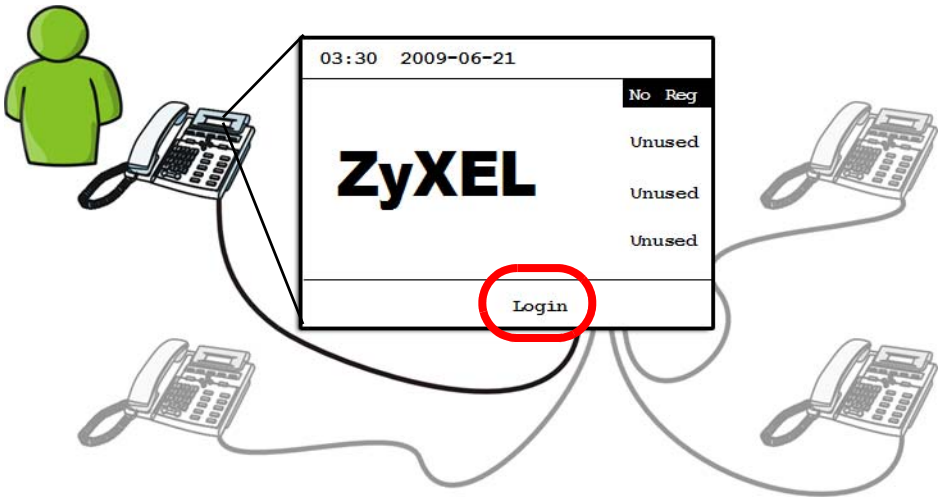
The Flexworker system lets a person use any IP phone connected to a Flexworker-compatible IP PBX (such as the ZyXEL X6004) and retain the following account-specific settings: call log, personal phonebook, speed dial, programmable key, call forward, block list, DND white list, SIP account, account name, user name, password, voice mail number, and advanced SIP settings.

All available IP phones (**A**) are suitable candidates as long as Flexworker is activated. A person can choose any one of them. An unavailable IP phone (**U**) cannot be chosen as it is one that someone is already logged into it. It can only be used once that person logs out.

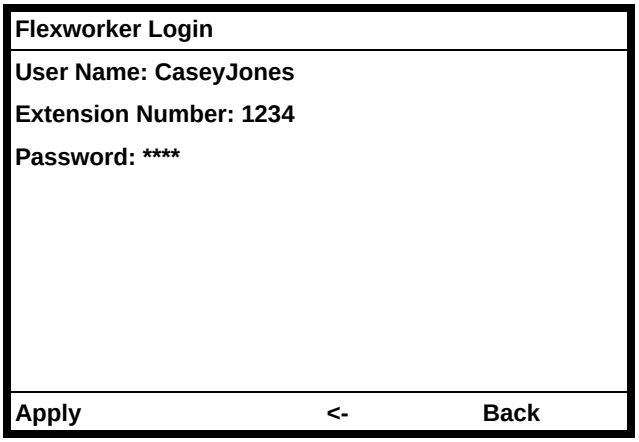
1 First, choose an available IP phone.



2 When you select an IP phone, press the **Login** key.



3 This displays the Login screen, as shown next.

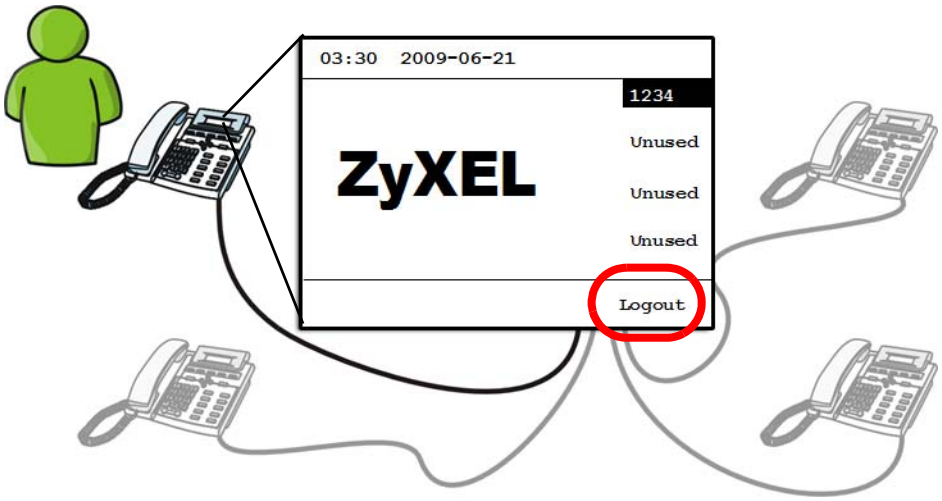


Enter your **User Name**, **Extension Number**, and **Password** then press **Apply**. The **Back** key returns to the previous screen without retaining any information you may have entered here while the **<-** (arrow) key lets you backspace to delete a mistakenly entered character.

Your user name, extension number and password should already have been provided by your network administrator or VoIP service provider since this information is configured directly on the IP PBX.

4 Once the V500 verifies the login information with the IP PBX, the LED screen updates accordingly and it downloads any other account-specific information.

5 Finally, press the **Logout** button to end your session at that IP phone..



After confirming that you want to log out, the V500 removes all account-specific settings from its memory.

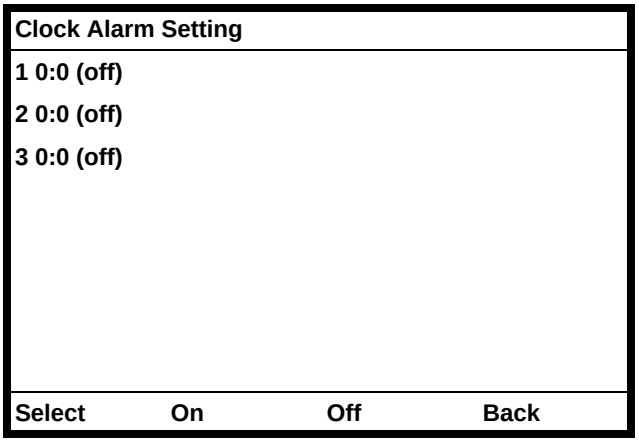
7.11 Clock Alarm Setting

Use the menu to configure the V500's clock alarm feature.

Select **Advanced Setting** > **Clock Alarm Setting**. The following screen displays.

Note: The three alarms must have different configurations. You cannot have two or three identical alarms.

Figure 109 LCD Menu: Clock Alarm Setting



The following table describes the labels in this screen.

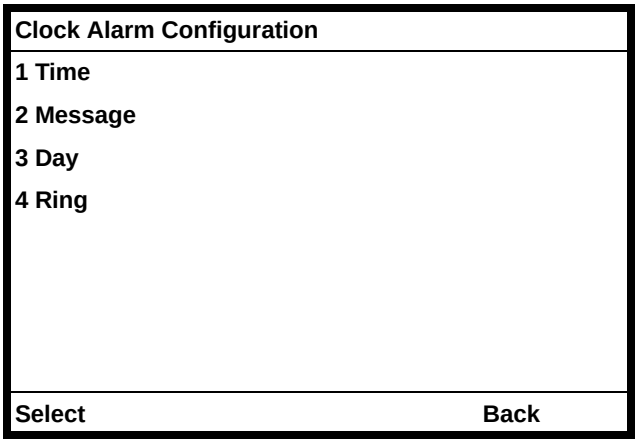
Table 99 LCD Menu: Clock Alarm Setting

LABEL	DESCRIPTION
0:0 (on/off)	Set this to **On** if you want to enable a configured alarm.
Select	Press this to choose the highlighted entry in the menu. Selecting an item opens its configuration sub-screen.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Back	Press this to return to the previous screen.

7.11.1 Clock Alarm Configuration

Use the menu to configure the V500's clock alarm feature.

Figure 110 LCD Menu: Clock Alarm Configuration



The following table describes the labels in this screen.

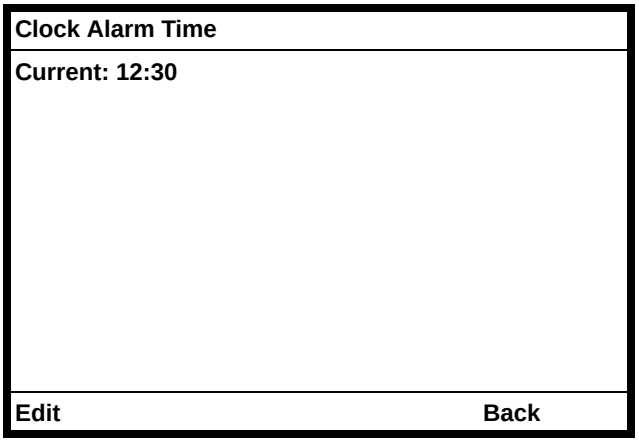
Table 100 LCD Menu: Clock Alarm Configuration

LABEL	DESCRIPTION
Time	Select this to configure the time the clock alarm is triggered.
Message	Select this to configure the on-screen message that the clock alarm displays when it is triggered
Day	Select this to configure the day(s) on which the clock alarm is triggered.
Ring	Select this to configure the ring type used when the clock alarm is triggered.
Select	Press this to choose the highlighted entry in the menu. Selecting an item opens its configuration sub-screen.
Back	Press this to return to the previous screen.

7.11.2 Clock Alarm Time

Select **Time** in the **Clock Alarm Configuration** screen. The following screen displays.

Figure 111 LCD Menu: Clock Alarm Time



The following table describes the labels in this screen.

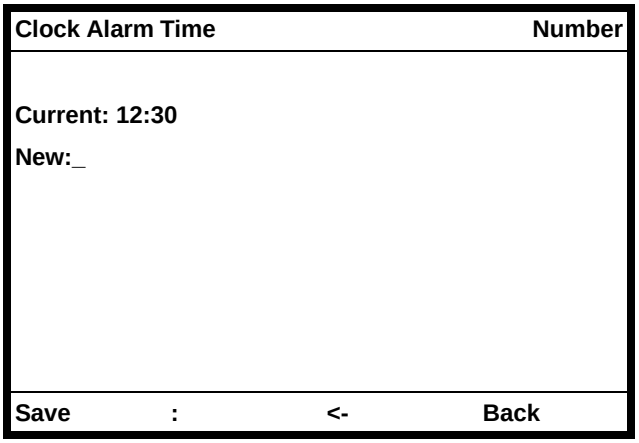
Table 101 LCD Menu: Clock Alarm Time

LABEL	DESCRIPTION
Current	This displays the current clock alarm time.
Edit	Press this to change the clock alarm time.
Back	Press this to return to the previous screen.

7.11.2.1 Clock Alarm Time - Edit

Press **Edit** in the **Clock Alarm Time** screen. The following screen displays.

Figure 112 LCD Menu: Clock Alarm Time - Edit



The following table describes the labels in this screen.

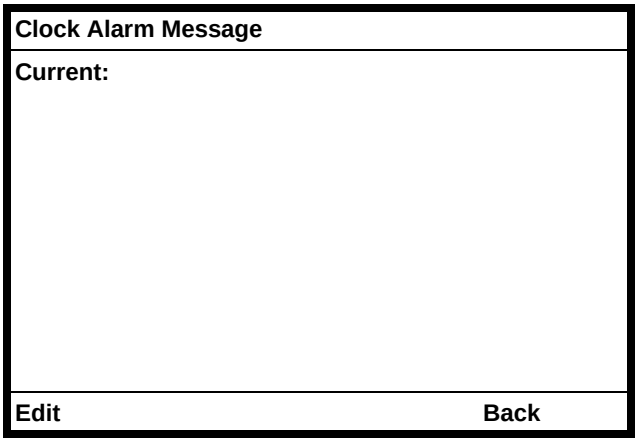
Table 102 LCD Menu: Clock Alarm Time - Edit

LABEL	DESCRIPTION
Current	This shows the clock alarm time already configured on the V500.
New	Enter the new clock alarm time.
Save	Press this to save your changes.
:	Press this to enter a colon between the hour and minutes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.11.3 Clock Alarm Message

Select **Message** in the **Clock Alarm Configuration** screen. The following screen displays.

Figure 113 LCD Menu: Clock Alarm Message



The following table describes the labels in this screen.

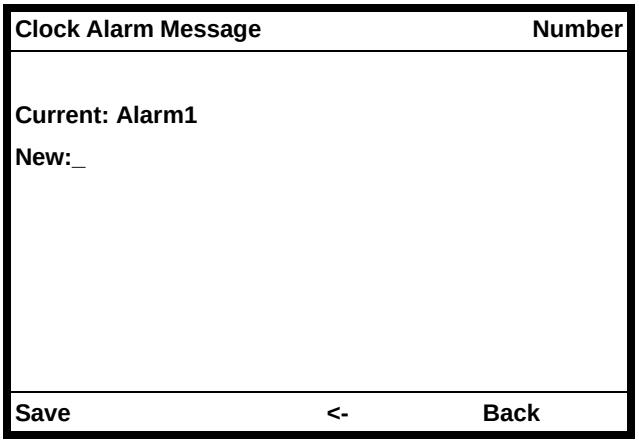
Table 103 LCD Menu: Clock Alarm Message

LABEL	DESCRIPTION
Current	This displays the current clock alarm message.
Edit	Press this to change the clock alarm message.
Back	Press this to return to the previous screen.

7.11.3.1 Clock Alarm Message - Edit

Press **Edit** in the **Clock Alarm Message** screen. The following screen displays.

Figure 114 LCD Menu: Clock Alarm Message - Edit



The following table describes the labels in this screen.

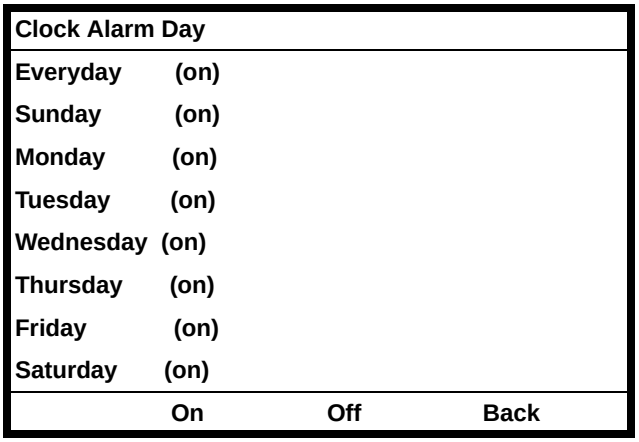
Table 104 LCD Menu: Clock Alarm Message - Edit

LABEL	DESCRIPTION
Current	This shows the clock alarm message already configured on the V500.
New	Enter the new clock alarm message. You can enter up to 14 alphanumeric characters. Spaces are not allowed.
Save	Press this to save your changes.
<-	Press this to delete a character.
Back	Press this to return to the previous screen.

7.11.4 Clock Alarm Day

Select **Day** in the **Clock Alarm Configuration** screen. The following screen displays.

Figure 115 LCD Menu: Clock Alarm Day



The following table describes the labels in this screen.

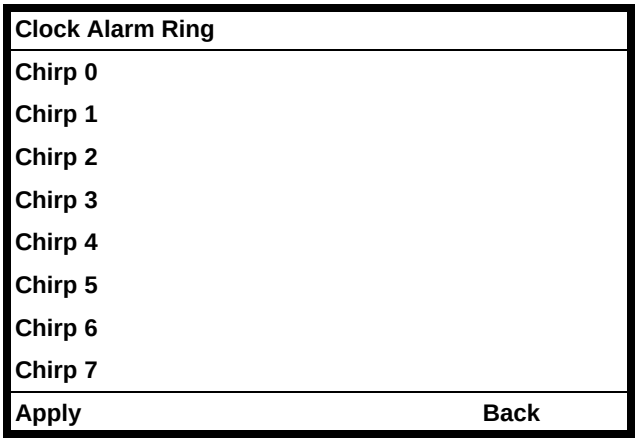
Table 105 LCD Menu: Clock Alarm Day

LABEL	DESCRIPTION
Everyday ~ Saturday	Select a day on which to allow the clock alarm to be triggered. The default is **On**.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Back	Press this to return to the previous screen.

7.11.5 Clock Alarm Ring

Select **Ring** in the **Clock Alarm Configuration** screen. The following screen displays.

Figure 116 LCD Menu: Clock Alarm Ring



The following table describes the labels in this screen.

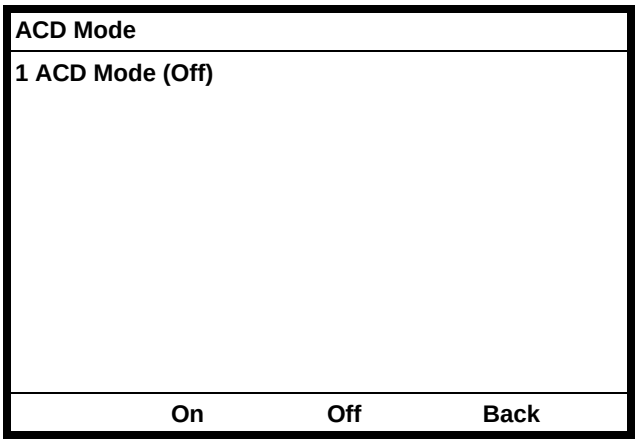
Table 106 LCD Menu: Clock Alarm Day

LABEL	DESCRIPTION
Chirp 0~12	Select a ring style to associate with the clock alarm.
Apply	Press this to save your settings.
Back	Press this to return to the previous screen.

7.12 ACD Mode

Use the menu to configure the V500's Automatic Call Distrubion feature.

Figure 117 LCD Menu: ACD Mode



The following table describes the labels in this screen.

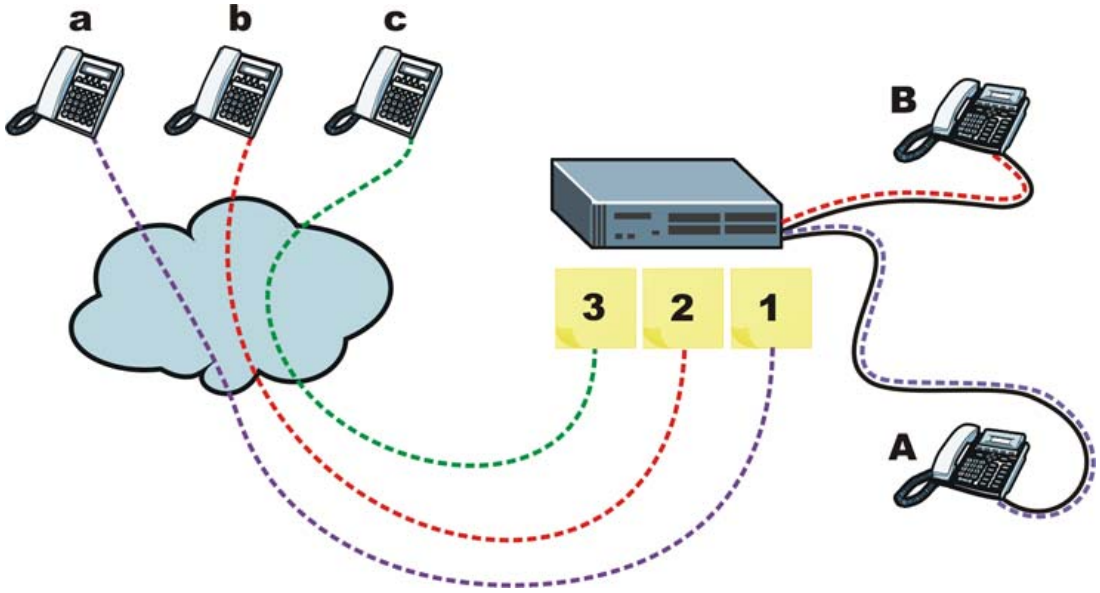
Table 107 LCD Menu: Clock Alarm Day

LABEL	DESCRIPTION
ACD Mode (On/Off)	Set this to **On** if you want to use ACD with this phone.
On	Press this to turn the highlighted menu item on.
Off	Press this to turn the highlighted menu item off.
Back	Press this to return to the previous screen.

7.12.1 Automatic Call Distribution

Automatic Call Distribution (ACD) is system used to route calls to specific phones. ACD systems can often be found in places that receive a high number of calls and which require a large staff of “agents” to field them, such as call centers. This allows callers into the system in situations where they do not need to talk to a specific agent but rather a specific type of agent (such as a technician, a customer support representative, a salesperson, and so on.)

Figure 118 ACD Example



In this example, outside phones (**a**, **b**, and **c**) dial-in over a common telephone network or over the Internet and then connect to a PBX. The PBX then puts the calls into a queue (**1**, **2** and **3**). When an agent becomes available, the first call in the queue (**a**) is routed to him (**A**). The second call (**b**) is then routed to the next available agent (**B**), and so on, until all calls have been routed. In this particular example, the third call (**c**) must wait until one of the two agents is available as there is no third agent to field it.

The V500 allows you log your phone into the system if you are an agent in an organization managed by an ACD-capable IP PBX such as the ZyXEL X6004.

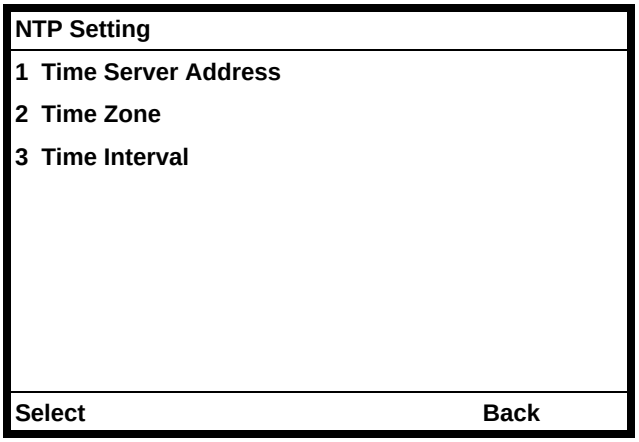
Talk to your network or telephone system adminstrator for more details on ACD.

7.13 NTP Setting

NTP stands for Network Time Protocol. It is employed by devices connected to the Internet in order to obtain a precise time setting from an official time server. These time servers are accurate to within 200 microseconds.

Use this menue to configure the time server settings of your V500.

Figure 119 LCD Menu: NTP Setting



The following table describes the labels in this screen.

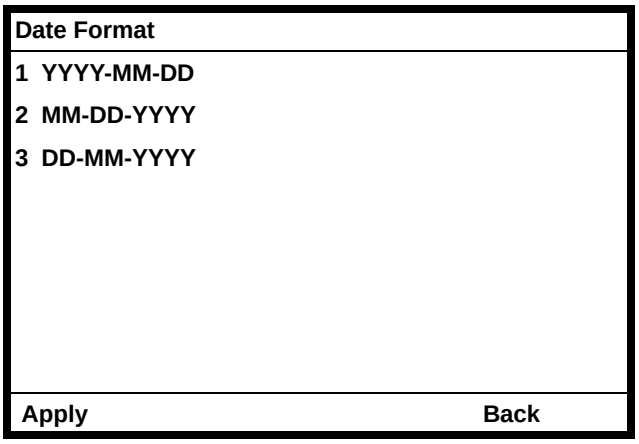
Table 108 LCD Menu: Clock Alarm Day

LABEL	DESCRIPTION
Time Server Address	Enter the IP address or URL (up to 20 characters in length) of your time server. Check with your ISP/network administrator if you are unsure of this information.
Time Zone	Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
Time Interval	Enter the duration (in minutes) between time checks. The V500 will only ping the time server to update itself once every x minutes where x is the value you enter here.
Select	Press this to choose the highlighted field in the menu.
Back	Press this to return to the previous screen.

7.14 Date Format

Use the menu to select the date format that shows on the V500's LCD.

Figure 120 LCD Menu: Date Format



Select the date format you want to use on your V500 and click **Apply** to finish.

8

Introducing the Web Configurator

8.1 Overview

This chapter describes how to access the V500's web configurator and provides an overview of its screens.

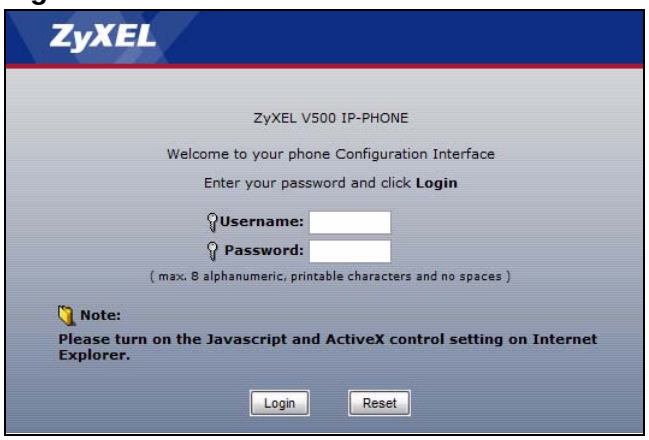
8.2 Accessing the Web Configurator

1. Make sure your hardware is properly connected and prepare your computer or computer network to connect to the V500 (refer to the Quick Start Guide).
2. Launch your web browser.
3. Enter the V500's IP address as the URL. The V500 is set to get an IP address automatically. Use the **System Info** > **IP Address** LCD screen to find it out (see Section 6.3.2 on page 81).

Note: If the V500 is not connected to a network, use the management IP address. The default management IP address is 192.168.5.1.

The following screen displays.

Figure 121 Password Screen



4 Type “admin” as the username and "1234" (default) as the password, then click Login.

5 It is strongly recommended that you change your password in the screen that displays next.

Note: If you do not change your password, anyone who knows the default password can access your phonebook and SIP account information over the network.

6 Type a new password (and retype it to confirm) then click **Apply**. Alternatively, click **Ignore**.

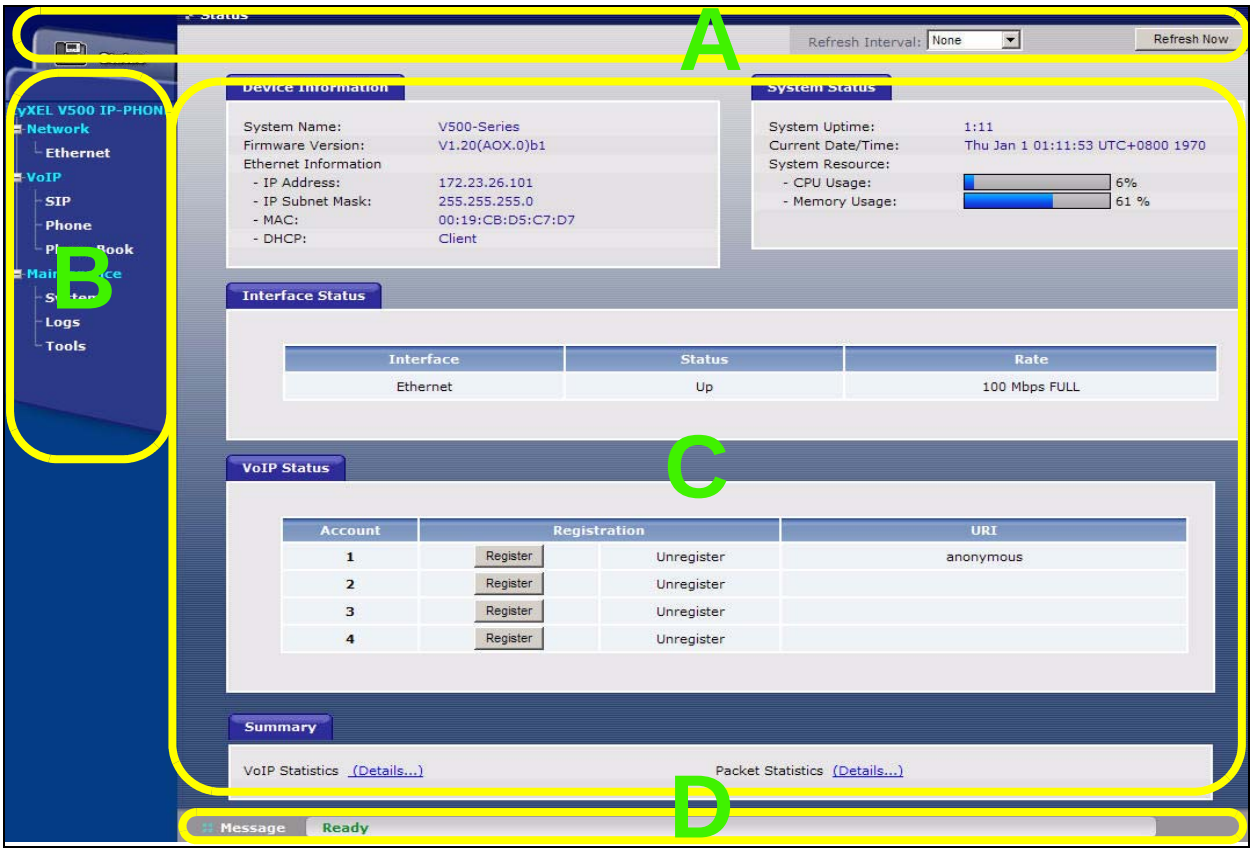
Note: If you do not change the password, the following screen appears every time you login.

Figure 122 Change Password Screen

ZyXEL
Please enter a new password
Your IP Phone is currently using the default password. To protect your network from unauthorized users we suggest you change your password at this time. Please select a new password that will be easy to remember yet difficult for others to guess. We suggest you combine text with numbers to make it more difficult for an intruder to guess.
The administrator password should must be between 4 - 8 digit.
New Password :
Retype to Confirm :
Apply
Ignore

The **Status** screen displays.

Figure 123 The Status Screen



As illustrated above, the web configurator screen is divided into four parts.

- **A** - title bar
- **B** - navigation panel
- **C** - main window
- **D** - status bar

8.2.1 Title Bar

The title bar has some icons in the upper right corner.

The icons have the following functions.

Table 109 Web Configurator Icons in the Title Bar

ICON	DESCRIPTION
	Language: Select a language for the Web Configurator user interface.
	Help: Click this to see online help related to the current screen.
	Logout: Click this icon to log out of the web configurator.

8.2.2 Navigation Panel

Use the menu items on the navigation panel to open screens and configure the V500's features. The following table describes the menu items.

Table 110 Navigation Panel Summary

LINK	TAB	FUNCTION
Status		This screen contains administrative and system-related information.
Network		
Ethernet	Internet Connection	Use this screen to configure ISP parameters, WAN IP address assignment and other advanced properties.
	Mgnt Port	Use this screen to set the V500's management IP address.
VoIP		
SIP	SIP Settings	Use this screen to configure your V500's Voice over IP settings.
	QoS	Use this screen to configure your V500's Quality of Service settings for VoIP.
Phone	Phone Settings	Use this screen to configure general phone settings, including volume levels and ringtone selection.
	Region	Use this screen to select your location.
	Speed Dial Settings	Use this screen to configure speed dial for phone numbers that you call often.
	Programmable Feature Key Settings	Use this screen to configure the custom keys on the V500.
Phone Book	Call Forward	Use this screen to redirect incoming calls to other phone numbers.
	Contact List	Use this screen to view, edit and add to your list of phonebook entries.
	Group List	Use this screen to view and edit the groups to which your phonebook entries belong.
	Block List	Use this screen to view and edit the phone numbers that you prevent from calling you.
	DND White List	Use this screen to view and edit the list of people who can call you even when DND (Do Not Disturb) is turned on.

Table 110 Navigation Panel Summary

LINK	TAB	FUNCTION
Maintenance		
System	General	This screen contains administrative and system-related information and also allows you to change your password.
	Time Setting	Use this screen to change your V500's time and date.
	Dynamic DNS	Use this screen to map your current dynamic IP address with one or many dynamic DNS services so that anyone can contact you.
	Clock Alarm Setting	Use this screen to set your V300's three built-in clock alarms.
Logs	View Log	Use this screen to display your device's logs.
	SIP Message	Use this screen to view SIP server messages and responses.
Tools	Firmware	Use this screen to upload firmware to your device.
	Configuration	Use this screen to backup and restore your device's configuration (settings) or reset the factory default settings.
	Restart	This screen allows you to reboot the V500 without turning the power off.
	Ring Maintenance	Use this screen to upload ringtone files to the V500, or download them from the V500.
	Packet Mirror	Use this screen to send data packets from the V500 to another IP address, where they can be analyzed to clarify Internet-related issues.

8.2.3 Main Window

The main window displays information and configuration fields. It is discussed in the rest of this document.

Right after you log in, the **Status** screen is displayed. See Chapter 9 on page 193 for more information about the **Status** screen.

8.2.4 Status Bar

Check the status bar when you click **Apply** or **OK** to verify that the configuration has been updated.

9

Status Screens

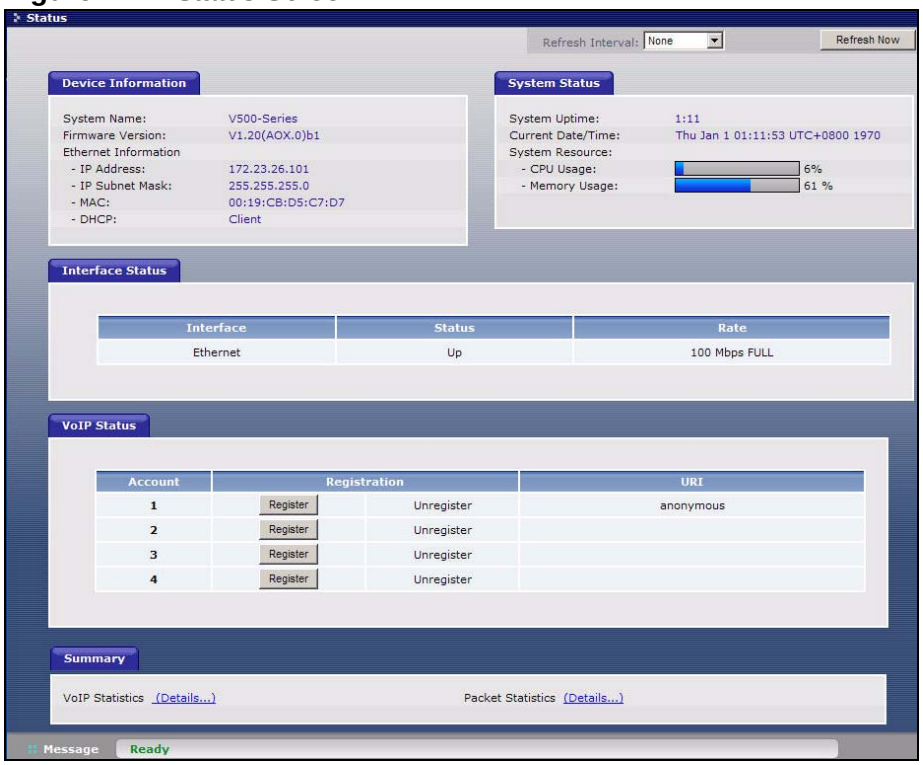
9.1 Overview

Use the **Status** screens to see the current status of the V500, its system resources, interfaces, and SIP accounts. You can also register and unregister SIP accounts. It also provides detailed traffic and VoIP statistics.

9.2 Status Screen

This screen displays the overall status and performance statistics of your device. Click the **Status** button on the navigation panel to display it.

Figure 124 Status Screen



Each field is described in the following table.

Table 111 Status Screen

LABEL	DESCRIPTION
Refresh Interval	Enter how often you want the V500 to update this screen.
Refresh Now	Click this to update this screen immediately.
Device Information	
System Name	This field displays the V500's system name. It is used for identification. You can change this in the **Maintenance > System > General** screen's **System Name** field.
Firmware Version	This field displays the current version of the firmware inside the device. You can change the firmware version by uploading new firmware in **Maintenance > Tools > Firmware**.
IP Address	This field displays the current IP address of the V500 on the LAN.
IP Subnet Mask	This field displays the current subnet mask on the LAN.
MAC	This is the MAC (Media Access Control) or Ethernet address unique to your V500.
DHCP	This field displays what DHCP services the V500 is receiving from the LAN. Choices are: **Client** - The V500 is a DHCP client. It is receiving DHCP services. **None** - The V500 is not receiving DHCP services. You can change this in the **Network > Ethernet > Internet Connection** screen.
System Status	
System Uptime	This field displays how long the V500 has been running since it last started up.
Current Date/ Time	This field displays the current date and time in the V500. You can change this in **Maintenance > System > Time Setting**.
CPU Usage	This field displays what percentage of the V500's processing ability is currently in use. If the this nears 100%, the V500 may slow down.
Memory Usage	This field displays what percentage of the V500's memory is currently in use. The higher the memory usage, the more likely the V500 is to slow down. Some memory is required just to start the V500 and to run the web configurator. You can reduce the memory usage by deleting rules in functions such as call forwarding, speed dial entries, and contact list entries.
Interface Status	
Interface	This column displays each interface of the V500.
Status	This field indicates whether or not the V500 is using the interface. This field displays **Up** when the V500 is using the interface and **Down** when the V500 is not using the interface.

Table 111 Status Screen

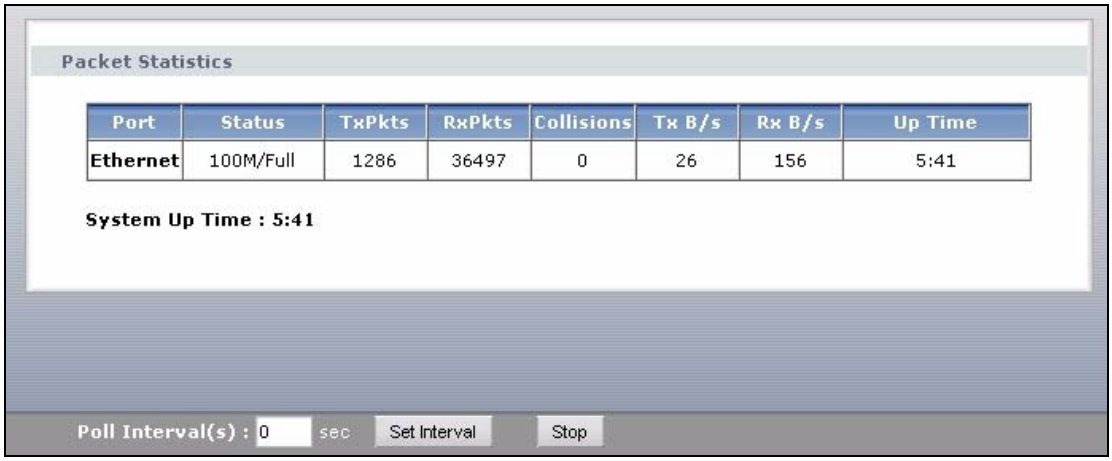
LABEL	DESCRIPTION
Rate	This displays the port speed and duplex setting. Ethernet port connections can be in half-duplex or full-duplex mode. Full-duplex refers to a device's ability to send and receive simultaneously, while half-duplex indicates that traffic can flow in only one direction at a time. The Ethernet port must use the same speed or duplex mode setting as the peer Ethernet port in order to connect.
VoIP Status	
Account	This column displays each SIP account in the V500.
Registration	This field displays the current registration status of the SIP account. You have to register SIP accounts with a SIP server to use VoIP. If the SIP account is already registered with the SIP server, Click **Unregister** to delete the SIP account's registration in the SIP server. This does not cancel your SIP account, but it deletes the mapping between your SIP identity and your IP address or domain name. The second field displays **Registered**. If the SIP account is not registered with the SIP server, Click **Register** to have the V500 attempt to register the SIP account with the SIP server. The second field displays **Unregister**.
URI	This field displays the account number and service domain of the SIP account. You can change these in **VoIP > SIP > SIP Settings**.
Summary	
VoIP Statistics	Click this link to view statistics about your VoIP usage.
Packet Statistics	Click this link to view port status and packet specific statistics.

9.2.1 Packet Statistics

This screen displays read-only information including port status and packet specific statistics. Also provided are "system up time" and "poll interval(s)". The

Poll Interval(s) field is configurable. To access it, open the **Status** screen (see Section 9.2 on page 193), and click **(Details...)** next to **Packet Statistics**.

Figure 125 Packet Statistics



The following table describes the fields in this screen.

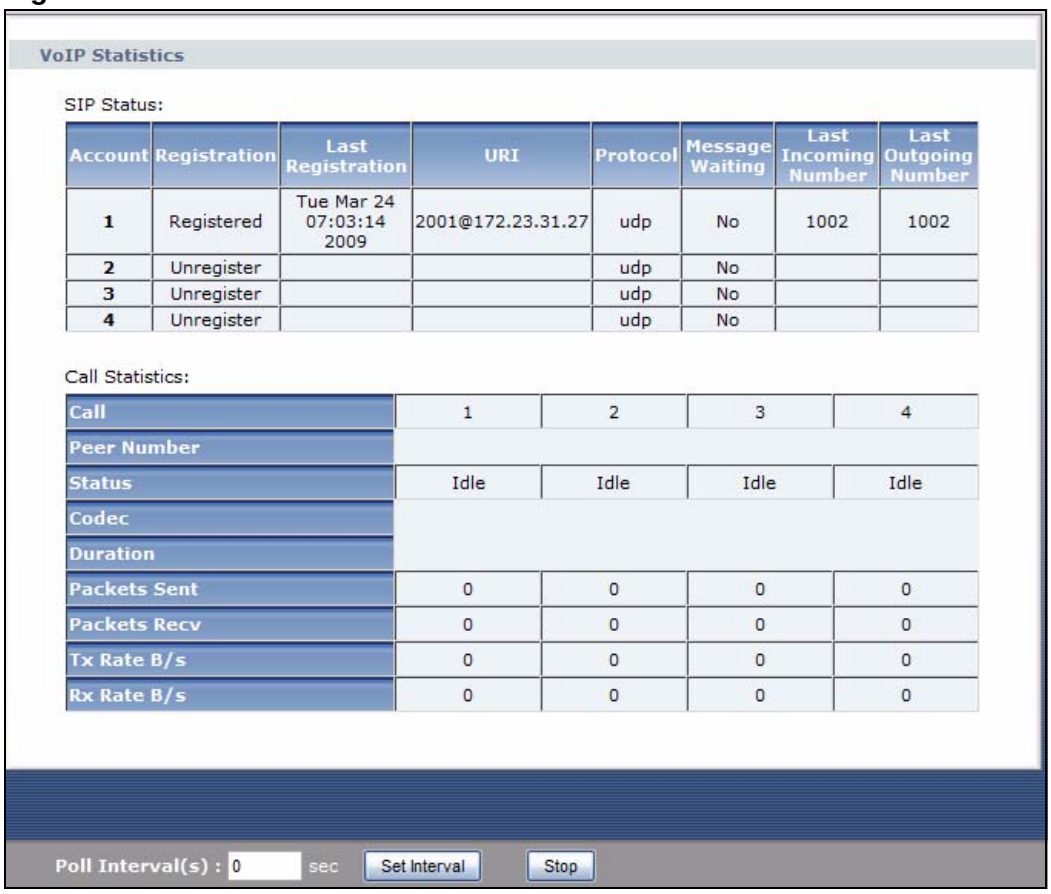
Table 112 Packet Statistics

LABEL	DESCRIPTION
Packet Statistics	
Port	This column displays each interface of the V500.
Status	This displays the port speed and duplex setting.
TxPkts	This field displays the number of packets transmitted on this interface.
RxPkts	This field displays the number of packets received on this interface.
Collisions	This field displays the number of collisions on this port.
Tx B/s	This field displays the number of bytes transmitted in the last second.
Rx B/s	This field displays the number of bytes received in the last second.
Up Time	This field displays the elapsed time this interface has been connected.
System up Time	This is the elapsed time the system has been on.
Poll Interval(s)	Type the time interval (in seconds) for the browser to refresh system statistics.
Set Interval	Click this button to apply the new poll interval you entered in the **Poll Interval** field.
Stop	Click this button to halt the refreshing of the system statistics.

9.2.2 VoIP Statistics

This screen displays SIP registration information, status of all incoming and outgoing calls and VoIP traffic statistics. To access it, open the **Status** screen (see Section 9.2 on page 193), and click **(Details...)** next to **VoIP Statistics**.

Figure 126 VoIP Statistics



Each field is described in the following table.

Table 113 VoIP Statistics

LABEL	DESCRIPTION
SIP Status	
Account	This column displays each SIP account in the V500.
Registration	This field displays the current registration status of the SIP account. You can change this in the **Status** screen. **Registered** - The SIP account is registered with a SIP server. **Unregister** - The SIP account has failed to register with a SIP server, or is not active.
Last Registration	This field displays the last time you successfully registered the SIP account. It displays **N/A** if you never successfully registered this account.

Table 113 VoIP Statistics

LABEL	DESCRIPTION
URI	This field displays the account number and service domain of the SIP account. You can change these in **VoIP > SIP > SIP Settings**.
Protocol	This field displays the transport protocol the SIP account uses. SIP accounts always use UDP.
Message Waiting	This field indicates whether or not there are any messages waiting for the SIP account.
Last Incoming Number	This field displays the last number that called the SIP account. It displays **N/A** if no number has ever dialed the SIP account.
Last Outgoing Number	This field displays the last number the SIP account called. It displays **N/A** if the SIP account has never dialed a number.
Call Statistics	
Call	This field displays the V500's line number.
Peer Number	This field displays the SIP number of the person on the other end of the line, when a call is in progress.
Status	This field indicates whether the line is active or not. **Idle** - The line is not active. **Dial** - the line is active and a connection to a SIP server has been made, but a call is not in progress. **Dialing** - the V500 is initiating a call on this line. **Ringing** - the V500 has initiated a call, and the phone at the other end is ringing. **Connected** - a call is in progress on this line. **Disconnect** - the line is active, but the connection with the SIP server has been terminated. **Hold** - a call on this line is on hold. **Waiting** - another line is active, and this line has an incoming call that has not been answered. **Transfer** - a call on this line is waiting to be transferred. **Transferred** - a call on this line has been transferred to another number, and is still ongoing. **Incoming** - an incoming call on this line is waiting to be answered. **Busy** - the V500 has tried to initiate a call, but the phone at the other end is engaged.
Codec	This field displays what voice codec (coder/decoder) is being used for a current VoIP call.
Duration	This field displays how long the current call has lasted.
Packets Sent	This field displays the number of packets the V500 has transmitted in the current call.
Packets Recv	This field displays the number of packets the V500 has received in the current call.

Table 113 VoIP Statistics

LABEL	DESCRIPTION
Tx B/s	This field displays how quickly the V500 has transmitted packets in the current call. The rate is the average number of bytes transmitted per second.
Rx B/s	This field displays how quickly the V500 has received packets in the current call. The rate is the average number of bytes transmitted per second.
Poll Interval(s)	Enter how often you want the V500 to update this screen, and click **Set Interval**.
Set Interval	Click this to make the V500 update the screen based on the amount of time you specified in the **Poll Interval** field.
Stop	Click this to make the V500 stop updating the screen.

9.2.3 Additional Statistics

If you enable the RTCP feature in **VoIP** > **Phone** > **Phone Settings** (Section 12.2 on page 224) then the VoIP Statistics screen displays additional data.

This information can be useful for troubleshooting connection problems. If you are not experiencing difficulties, it is recommended that you do not activate the RTCP feature as it could noticeably affect your bandwidth.

Note: Not all possible combinations of additional VoIP statistics can be displayed here, but they are described in the subsequent table.

Figure 127 Additional VoIP Statistics

Call	1	2	3	4
Peer Number				
Status	Idle	Idle	Idle	Idle
Codec				
Duration				
Packets Sent	0	0	0	0
Packets Recv	0	0	0	0
Tx Rate B/s	0	0	0	0
Rx Rate B/s	0	0	0	0
Tx Packet Loss Rate	0 %	0 %	0 %	0 %
Rx Packet Loss Rate	0 %	0 %	0 %	0 %
Tx Total Packet Loss	0	0	0	0
Rx Total Packet Loss	0	0	0	0

Each field is described in the following table.

Table 114 Additional VoIP Statistics

LABEL	DESCRIPTION
Tx Packet Loss Rate	This indicates the total number of RTP data packets that have been lost since the beginning of transmission.
Rx Packet Loss Rate	This indicates the total number of RTP data packets that have been lost since the beginning of reception.
Tx Total Packet Loss	This indicates the fraction of RTP data packets from the source that have been lost since the beginning of transmission.
Rx Total Packet Loss	This indicates the fraction of RTP data packets from the source that have been lost since the beginning of reception.
Discard Rate	This indicates the fraction of RTP data packets from the source that have been discarded since the beginning of reception/ transmission due to late or early arrival, under-run or overflow at the receiving jitter buffer.
End to End System Delay	This indicates the most recently estimated end-system delay, which is the total sample delay in the send direction (including encoder and packetization delays) and the receive direction (including jitter buffer and decoding delays).
R Factor	This indicates the “mouth-to-ear” transmission quality rating. The range is generally 0-120 although a range of 50-94 is normal for narrowband telephony and 50-110 for wideband telephony.
MOS-CQ	This indicates the Mean Opinion Score - Conversational Quality (MOS-CQ), which is a voice metric measured on a scale of 1 to 5. The estimated mean opinion score for conversational quality is defined as including the effects of delay and other effects that would affect conversational quality.
Jitter Buffer Nominal Delay	This indicates the current nominal jitter buffer delay in milliseconds, which corresponds to the nominal jitter buffer delay for packets that arrive exactly on time.
Jitter Buffer Maximum Delay	This indicates the current maximum jitter buffer delay in milliseconds which corresponds to the earliest arriving packet that is not discarded.
Jitter Buffer Absolute Maximum Delay	This indicates the absolute maximum delay in milliseconds that the adaptive jitter buffer can reach under worst case conditions.

10

Network Setup

10.1 Overview

This chapter discusses how to configure the V500's network settings.

10.1.1 What You Can Do in This Chapter

- The **Internet Connection** screen allows you change your V500's Internet access settings (Section 10.2 on page 203).
- The **Management Port** screen allows configure the management IP address of the V500 (Section 10.3 on page 204).

10.1.2 What You Need to Know

The following terms and concepts may help as you read through this chapter.

IP Address Assignment

Every computer on the Internet must have a unique IP address. If your networks are isolated from the Internet (for instance, only between your two branch offices) you can assign any IP addresses to the hosts without problems. However, the Internet Assigned Numbers Authority (IANA) has reserved the following three blocks of IP addresses specifically for private networks.

Table 115 Private IP Address Ranges

10.0.0.0 - 10.255.255.255
172.16.0.0 - 172.31.255.255
192.168.0.0 - 192.168.255.255

You can obtain your IP address from the IANA, from an ISP or have it assigned by a private network. If you belong to a small organization and your Internet access is through an ISP, the ISP can provide you with the Internet addresses for your local networks. On the other hand, if you are part of a much larger organization, you should consult your network administrator for the appropriate IP addresses.

Note: Regardless of your particular situation, do not create an arbitrary IP address; always follow the guidelines above. For more information on address assignment, please refer to RFC 1597, Address Allocation for Private Internets and RFC 1466, Guidelines for Management of IP Address Space.

IP Address and Subnet Mask

Similar to the way houses on a street share a common street name, computers on a LAN share one common network number.

Where you obtain your network number depends on your particular situation. If the ISP or your network administrator assigns you a block of registered IP addresses, follow their instructions in selecting the IP addresses and the subnet mask.

If the ISP did not explicitly give you an IP network number, then most likely you have a single user account and the ISP will assign you a dynamic IP address when the connection is established. The Internet Assigned Number Authority (IANA) reserved this block of addresses specifically for private use; please do not use any other number unless you are told otherwise. Let's say you select 192.168.1.0 as the network number; which covers 254 individual addresses, from 192.168.1.1 to 192.168.1.254 (zero and 255 are reserved). In other words, the first three numbers specify the network number while the last number identifies an individual computer on that network.

Once you have decided on the network number, pick an IP address that is easy to remember, for instance, 192.168.1.2, for your device, but make sure that no other device on your network is using that IP address.

The subnet mask specifies the network number portion of an IP address. Your device will compute the subnet mask automatically based on the IP address that you entered. You don't need to change the subnet mask computed by the device unless you are instructed to do otherwise.

PPPoE Encapsulation

The V500 supports PPPoE (Point-to-Point Protocol over Ethernet). PPPoE is an IETF standard (RFC 2516) specifying how a personal computer (PC) interacts with a broadband modem (DSL, cable, wireless, etc.) connection.

For the service provider, PPPoE offers an access and authentication method that works with existing access control systems (for example Radius).

One of the benefits of PPPoE is the ability to let you access one of multiple network services, a function known as dynamic service selection. This enables the service provider to easily create and offer new IP services for individuals.

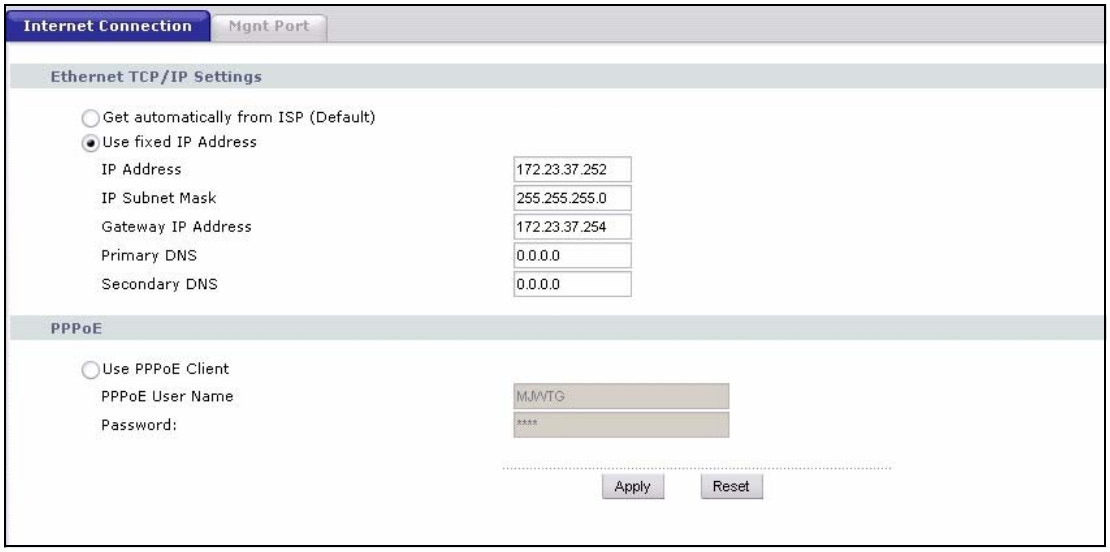
Operationally, PPPoE saves significant effort for both you and the ISP or carrier, as it requires no specific configuration of the broadband modem at the customer site.

By implementing PPPoE directly on the V500 (rather than individual computers), the computers on the LAN do not need PPPoE software installed, since the V500 does that part of the task. Furthermore, with NAT, all of the LANs' computers will have access.

10.2 Internet Connection

Use this screen to change your V500's Internet access settings. Click **Network** > **Internet Connection**.

Figure 128 Network > Internet Connection



The following table describes the labels in this screen.

Table 116 Network > Internet Connection

LABEL	DESCRIPTION
Ethernet TCP/IP Settings	
Get automatically from DHCP	Select this option if your ISP did not give you an IP address.
Use Fixed IP Address	Select this option If your ISP assigned a fixed IP address. Enter the address information in the following fields.
IP Address	Enter your WAN IP address in this field if you selected **Use Fixed IP Address**.
IP Subnet Mask	Enter the **IP Subnet Mask** in this field.
Gateway IP Address	Enter a **Gateway IP Address** (if your ISP gave you one) in this field.

Table 116 Network > Internet Connection

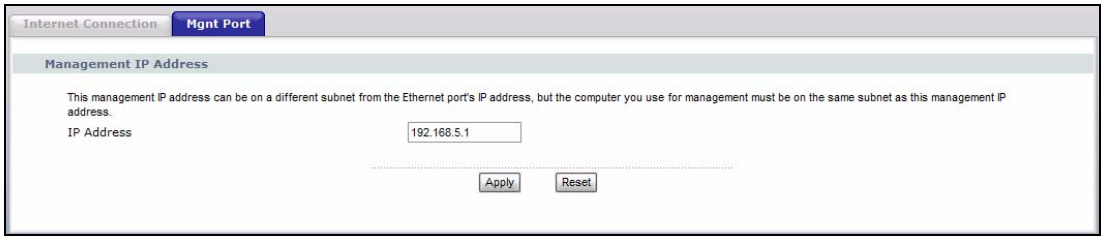
LABEL	DESCRIPTION
Primary DNS Secondary DNS	Enter the DNS (Domain Name Service) servers, if provided by your ISP.
PPPoE	
Use PPPoE Client	Select this if your V500 is a PPPoE client.
PPPoE User Name	Type the user name given to you by your ISP.
Password	Type the password associated with the user name above.
Apply	Click this to save your changes.
Reset	Click this to reload the previous configuration for this screen.

10.3 Management Port

Use this screen to configure the management IP address of the V500. You can use this IP address to connect to the V500 even when its WAN IP address is in a different subnet. Your computer must be in the same subnet as the management IP address to use it.

Click **Network** > **Ethernet** > **Mgnt Port**. The following screen displays.

Figure 129 Network > Mgnt Port


Internet Connection
Mgnt Port
Management IP Address
This management IP address can be on a different subnet from the Ethernet port's IP address, but the computer you use for management must be on the same subnet as this management IP address.
IP Address
192.168.5.1
Apply
Reset

The following table describes the labels in this screen.

Table 117 Network > Mgnt Port

LABEL	DESCRIPTION
Management IP Address	
IP Address	Enter the new management IP address you want the V500 to use.
Apply	Click this to save your changes.
Reset	Click this to reload the previous configuration for this screen.

11

SIP Account Setup

11.1 Overview

This chapter discusses the V500's **VoIP** > **SIP** screens.

11.1.1 What You Can Do in This Chapter

- The **SIP Settings** screen allows you to maintain basic information about each SIP account (Section 11.2 on page 206).
- The **SIP QoS** screen allows you to maintain ToS and VLAN settings for the V500 (Section 11.3 on page 213).

11.1.2 What You Need to Know

The following terms and concepts may help as you read through this chapter.

Introduction to VoIP

VoIP (Voice over IP) is the sending of voice signals over the Internet Protocol. This allows you to make phone calls and send faxes over the Internet at a fraction of the cost of using the traditional circuit-switched telephone network. You can also use servers to run telephone service applications like PBX services and voice mail. Internet Telephony Service Provider (ITSP) companies provide VoIP service. A company could alternatively set up an IP-PBX and provide its own VoIP service.

Circuit-switched telephone networks require 64 kilobits per second (kbps) in each direction to handle a telephone call. VoIP can use advanced voice coding techniques with compression to reduce the required bandwidth.

Introduction to SIP

The Session Initiation Protocol (SIP) is an application-layer control (signaling) protocol that handles the setting up, altering and tearing down of voice and multimedia sessions over the Internet.

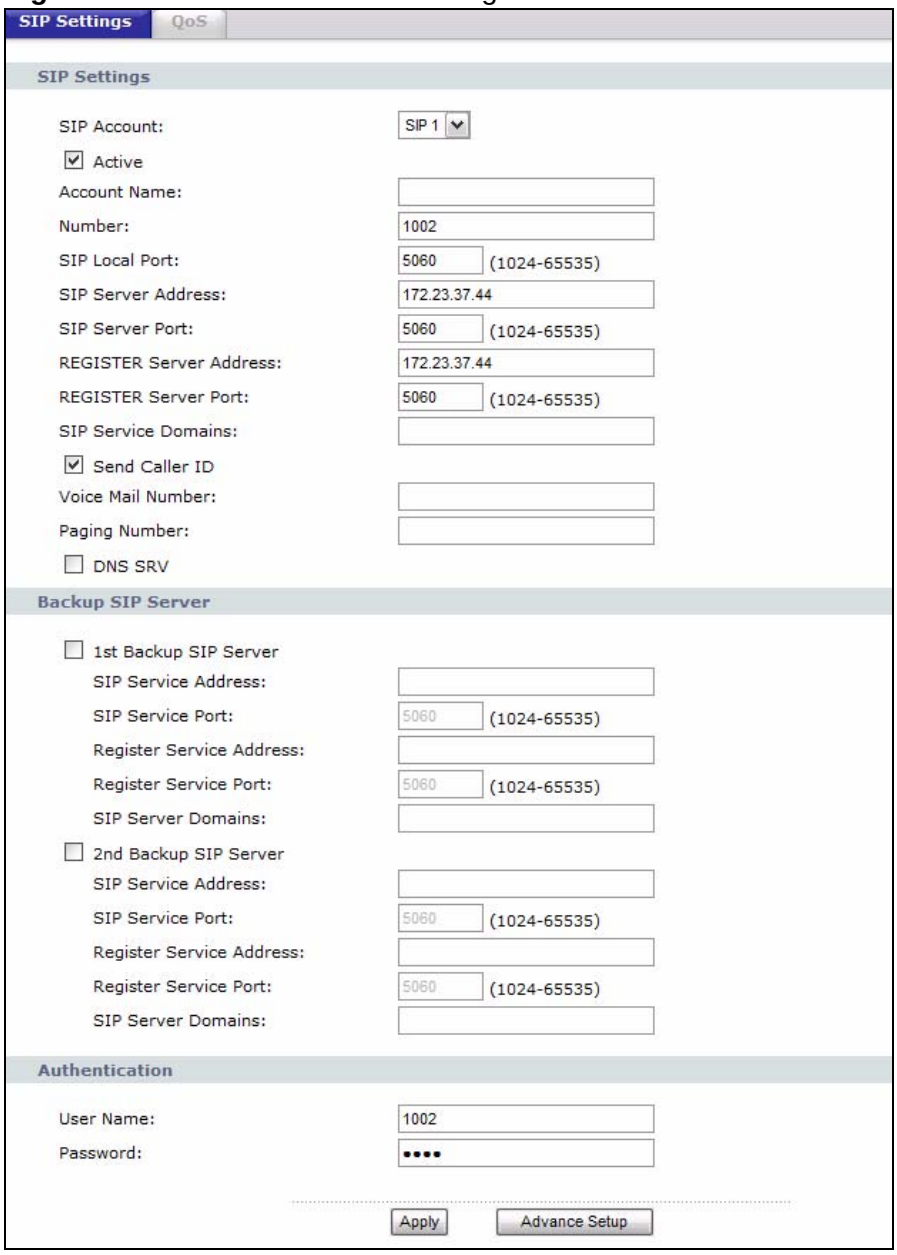
SIP signaling is separate from the media for which it handles sessions. The media that is exchanged during the session can use a different path from that of the

signaling. SIP handles telephone calls and can interface with traditional circuit-switched telephone networks.

11.2 SIP Settings Screen

Use this screen to maintain basic information about each SIP account. Your VoIP service provider (the company that lets you make phone calls over the Internet) should provide this. You can also enable and disable each SIP account. To access this screen, click **VoIP > SIP > SIP Settings**.

Figure 130 VoIP > SIP > SIP Settings



Each field is described in the following table.

Table 118 VoIP > SIP > SIP Settings

LABEL	DESCRIPTION
SIP Settings	
SIP Account	Select the SIP account you want to see in this screen. If you change this field, the screen automatically refreshes.
Active	Select this if you want the V500 to use this account. Clear it if you do not want the V500 to use this account.
Account Name	This is the name that appears in this SIP account's tab on the LCD screen. You can enter up to 20 printable English keyboard characters, but only the first 6 show up on the LCD screen account tab.
Number	Enter your SIP number. In the full SIP URI, this is the part before the @ symbol. You can use up to 50 printable English keyboard characters.
SIP Local Port	Enter the V500's listening port number, if your VoIP service provider gave you one. Otherwise, keep the default value.
SIP Server Address	Enter the IP address or domain name of the SIP server provided by your VoIP service provider. You can use up to 32 printable English keyboard characters. It does not matter whether the SIP server is a proxy, redirect or register server.
SIP Server Port	Enter the SIP server's listening port number, if your VoIP service provider gave you one. Otherwise, keep the default value.
REGISTER Server Address	Enter the IP address or domain name of the SIP register server, if your VoIP service provider gave you one. Otherwise, enter the same address you entered in the **SIP Server Address** field. You can use up to 32 printable English keyboard characters.
REGISTER Server Port	Enter the SIP register server's listening port number, if your VoIP service provider gave you one. Otherwise, enter the same port number you entered in the **SIP Server Port** field.
SIP Service Domain	Enter the SIP service domain name. In the full SIP URI, this is the part after the @ symbol. You can use up to 32 printable English keyboard characters.
Send Caller ID	Select this if you want to send identification when you make VoIP phone calls. Clear this if you do not want to send identification.
Voice Mail Number	Enter the voicemail number associated with this SIP account.
Paging Number	The paging feature allows you to call a group of extensions simultaneously. When this is configured and you press the **PAGING** key on the V500, all the extensions in the group automatically go into speakerphone mode. Your system administrator must set up paging groups on the network, and you must know the paging number for the group. Enter the group number in this field.
DNS SRV	Select this to use the DNS server(s) you configured in the **Network** > **Ethernet** > **Internet Connection** screen.
Backup SIP Server	

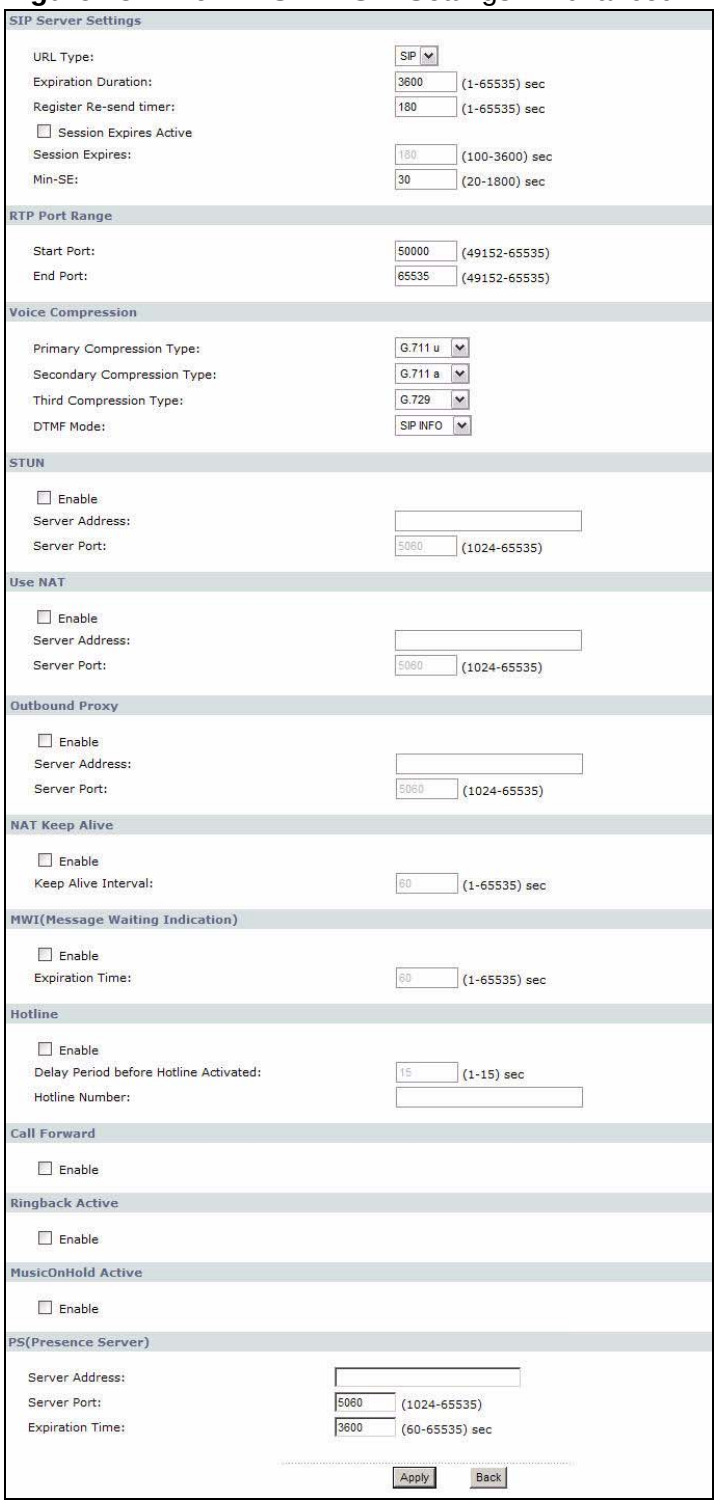
Table 118 VoIP > SIP > SIP Settings

LABEL	DESCRIPTION
1st / 2nd Backup SIP Server	Select the check box to have the V500 use the backup SIP server(s) you configure. If the V500 cannot use the server you configured in the **SIP Settings** section of this screen, it tries to use the backup server(s). It tries to use the **1st Backup SIP Server** and, if it cannot connect, then tries to use the **2nd Backup SIP Server**.
SIP Service Address	Enter the IP address or domain name of the backup SIP server provided by your VoIP service provider. You can use up to 32 printable English keyboard characters. It does not matter whether the SIP server is a proxy, redirect or register server.
SIP Service Port	Enter the backup SIP server's listening port number, if your VoIP service provider gave you one. Otherwise, keep the default value.
Register Service Address	Enter the IP address or domain name of the backup SIP register server, if your VoIP service provider gave you one. Otherwise, enter the same address you entered in the **SIP Service Address** field for this backup server. You can use up to 32 printable English keyboard characters.
Register Service Port	Enter the backup SIP register server's listening port number, if your VoIP service provider gave you one. Otherwise, enter the same port number you entered in the **SIP Service Port** field for this backup server.
SIP Service Domain	Enter the SIP service domain name. In the full SIP URI, this is the part after the @ symbol. You can use up to 32 printable English keyboard characters.
Authentication	
User Name	Enter the user name for registering this SIP account, exactly as it was given to you. You can use up to 20 printable English keyboard characters.
Password	Enter the user name for registering this SIP account, exactly as it was given to you. You can use up to 20 printable English keyboard characters.
Apply	Click this to save your changes.
Advanced Setup	Click this to edit the advanced settings for this SIP account. The **Advanced SIP Setup** screen appears.

11.2.1 Advanced SIP Setup Screen

Use this screen to maintain advanced settings for each SIP account. Click **Advanced Setup** in **VoIP > SIP > SIP Settings**. The following screen displays.

Figure 131 VoIP > SIP > SIP Settings > Advanced



Each field is described in the following table.

Table 119 VoIP > SIP > SIP Settings > Advanced Setup

LABEL	DESCRIPTION
SIP Server Settings	
URL Type	Select whether or not to include the SIP service domain name when the V500 sends the SIP number. **SIP** - include the SIP service domain name **TEL** - do not include the SIP service domain name
Expiration Duration	Enter the number of seconds your SIP account is registered with the SIP register server before it is deleted. The V500 automatically tries to re-register your SIP account when one-half of this time has passed. (The SIP register server might have a different expiration.)
Register Re-send timer	Enter the number of seconds the V500 waits before it tries again to register the SIP account, if the first try failed or if there is no response.
Session Expires Active	Select this to have the V500 use the setting you configure in the **Session Expire** field. If you do not select this, the V500 does not automatically disconnect calls.
Session Expires	Enter the number of seconds the conversation can last before the call is automatically disconnected. Usually, when one-half of this time has passed, the V500 or the other party updates this timer to prevent this from happening.
Min-SE	Enter the minimum number of seconds the V500 accepts for a session expiration time when it receives a request to start a SIP session. If the request has a shorter time, the V500 rejects it.
RTP Port Range	
Start Port End Port	Enter the listening port number(s) for RTP traffic, if your VoIP service provider gave you this information. Otherwise, keep the default values. To enter one port number, enter the port number in the **Start Port** and **End Port** fields. To enter a range of ports, • enter the port number at the beginning of the range in the **Start Port** field • enter the port number at the end of the range in the **End Port** field.

Table 119 VoIP > SIP > SIP Settings > Advanced Setup (continued)

LABEL	DESCRIPTION
Voice Compression	Select the type of voice coder/decoder (codec) that you want the V500 to use. G.711 provides high voice quality but requires more bandwidth (64 kbps). • **G.711A** is typically used in Europe. • **G.711u** is typically used in North America and Japan. • **G.722** provides excellent sound quality and operates at 48 ~ 64 kbps. • **G.726** operates at **16**, **24**, **32** or **40** kbps. • By contrast, **G.729** requires only 8 kbps. • **G.723** refers to G.723.1, which uses 5.3 or 6.4 kbps. The V500 must use the same codec as the peer. When two SIP devices start a SIP session, they must agree on a codec.
Primary Compression Type	Select the V500's first choice for voice coder/decoder.
Secondary Compression Type	Select the V500's second choice for voice coder/decoder.
Third Compression Type	Select the V500's third choice for voice coder/decoder.
DTMF Mode	Control how the V500 handles the alphanumeric keypad tones. You should use the same mode your VoIP service provider uses. **RFC 2833** - send the DTMF tones in RTP packets **PCM** - send the DTMF tones in the voice data stream. This method works best when you are using a codec that does not use compression (like G.711). Codecs that use compression (like G.729) can distort the tones. **SIP INFO** - send the DTMF tones in SIP messages.
STUN	
Enable	Select this if all of the following conditions are satisfied. • There is a NAT router between the V500 and the SIP server. • The NAT router is not a SIP ALG. • Your VoIP service provider gave you an IP address or domain name for a STUN server. Otherwise, clear this field.
Server Address	Enter the IP address or domain name of the STUN server provided by your VoIP service provider.
Server Port	Enter the STUN server's listening port, if your VoIP service provider gave you one. Otherwise, keep the default value.
Use NAT	
Enable	Select this if your service provider has a NAT router between your phone and the SIP server.

Table 119 VoIP > SIP > SIP Settings > Advanced Setup (continued)

LABEL	DESCRIPTION
Server address	Enter the IP address or domain name of the NAT router.
Server Port	Enter the NAT router's listening port, if your network administrtor gave you one. Otherwise, keep the default value.
Outbound Proxy	
Enable	Select this if your service provider has a SIP outbound server to handle voice calls. This allows the V500 to work with any type of NAT router and eliminates the need for STUN or a SIP ALG. Turn off any SIP ALG on a NAT router in front of the V500 to keep it from retranslating the IP address (since this is already handled by the outbound proxy server.
Server address	Enter the IP address or domain name of the SIP outbound proxy server.
Server Port	Enter the outbound proxy server's listening port, if your VoIP service provider gave you one. Otherwise, keep the default value.
NAT Keep Alive	
Enable	Select this to stop NAT routers between the V500 and SIP server (a SIP proxy server or outbound proxy server) from dropping the SIP session. The V500 does this by sending SIP notify messages to the SIP server based on the specified interval.
Keep Alive Interval	Enter how often (in seconds) the V500 should send SIP notify messages to the SIP server.
MWI (Message Waiting Indication)	
Enable	Select this if you want to hear a waiting (beeping) dial tone on your phone when you have at least one voice message. Your VoIP service provider must support this feature.
Expiration Time	Keep the default value, unless your VoIP service provider tells you to change it. Enter the number of seconds the SIP server should provide the message waiting service each time the V500 subscribes to the service. Before this time passes, the V500 automatically subscribes again.
Hot Line	Configure this option to have the V500 automatically dial the **Hotline Number** after the line is off the hook for the duration specified in the **Delay Period** option. This is especially useful for dialing emergency numbers.
Enable	Select this to enable the Hot Line feature.
Delay Period before Hotline Activated:	Enter the duration the phone can remain off the hook before automatically dialing the hotline number. You can set the delay from 1 to 15 seconds.
Hotline Number:	Enter the number to be dialed once the V500 has surpassed the delay period.
Call Forward	
Enable	Select this if you want the V500 to use the call forwarding rules you set up in the **VoIP** > **Phone Book** > **Call Forward** screen.
RingBack Active	

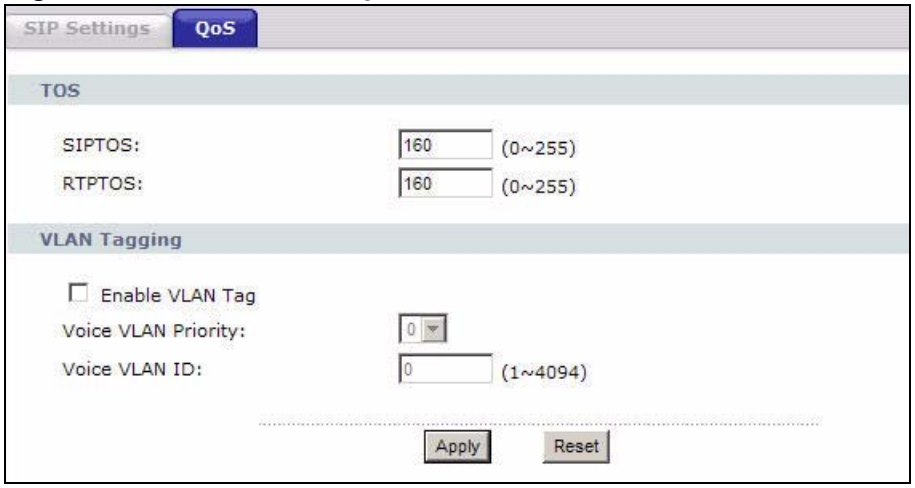
Table 119 VoIP > SIP > SIP Settings > Advanced Setup (continued)

LABEL	DESCRIPTION
Enable	Select this to turn the RingBack function on. When someone calls you, and the line is busy, the caller is given the option to set an automatic RingBack. When you finish your call, the V500 automatically calls the person who called you, and then rings to alert you once the caller picks up.
MusicOnHold Active	
Enable	Check this box if you want people to hear a customized recording when you put them on hold. This function depends on your service provider.
PS (Presence Server)	
Server Address	Enter your presence server IP address.
Server Port	Enter your presence server port number.
Expiration Time	Enter the number of seconds to wait before expiring a user's presence setting on the network.
Apply	Click this to save your changes.
Back	Click this to return to the **SIP Settings** screen without saving your changes.

11.3 SIP QoS Screen

Use this screen to maintain ToS and VLAN settings for the V500. Click **VoIP > SIP > QoS**. The following screen displays.

Figure 132 VoIP > SIP > QoS



Each field is described in the following table.

Table 120 VoIP > SIP > QoS

LABEL	DESCRIPTION
TOS	
SIPTOS	Enter the priority for SIP voice transmissions. The V500 creates Type of Service priority tags with this priority to voice traffic that it transmits.
RTPTOS	Enter the priority for RTP voice transmissions. The V500 creates Type of Service priority tags with this priority to RTP traffic that it transmits.
VLAN Tagging	
Enable VLAN Tag	Select this if the V500 has to be a member of a VLAN to communicate with the SIP server. Ask your network administrator if you are unsure. Otherwise, clear this field.
Voice VLAN Priority	If the V500 is a member of a VLAN group, you may choose a priority level for its VoIP traffic within the VLAN. The priority level is from **0-7**, with 0 being the lowest level and 7 being the highest level. You can assign the V500 with a higher traffic priority for better voice quality.
Voice VLAN ID	Enter the VLAN ID provided by your network administrator. Your LAN and gateway must be configured to use VLAN tags.
Apply	Click this to save your changes.
Reset	Click this to set every field in this screen to its last-saved value.

11.4 Technical Reference

The following section contains additional technical information about the V500 features described in this chapter.

SIP Identities

A SIP account uses an identity (sometimes referred to as a SIP address). A complete SIP identity is called a SIP URI (Uniform Resource Identifier). A SIP account's URI identifies the SIP account in a way similar to the way an e-mail address identifies an e-mail account. The format of a SIP identity is SIP-Number@SIP-Service-Domain.

SIP Number

The SIP number is the part of the SIP URI that comes before the “@” symbol. A SIP number can use letters like in an e-mail address (johndoe@your-ITSP.com for example) or numbers like a telephone number (1122334455@VoIP-provider.com for example).

SIP Service Domain

The SIP service domain of the VoIP service provider (the company that lets you make phone calls over the Internet) is the domain name in a SIP URI. For example, if the SIP address is 1122334455@VoIP-provider.com, then "VoIP-provider.com" is the SIP service domain.

SIP Call Progression

The following figure displays the basic steps in the setup and tear down of a SIP call. **A** calls **B**.

Table 121 SIP Call Progression

A		B
1. INVITE		
		2. Ringing
		3. OK
4. ACK		
	5.Dialogue (voice traffic)	
6. BYE		
		7. OK

1 **A** sends a SIP INVITE request to **B**. This message is an invitation for **B** to participate in a SIP telephone call.

2 **B** sends a response indicating that the telephone is ringing.

3 **B** sends an OK response after the call is answered.

4 **A** then sends an ACK message to acknowledge that **B** has answered the call.

5 Now **A** and **B** exchange voice media (talk).

6 After talking, A hangs up and sends a BYE request.

7 **B** replies with an OK response confirming receipt of the BYE request and the call is terminated.

SIP Client Server

SIP is a client-server protocol. A SIP client is an application program or device that sends SIP requests. A SIP server responds to the SIP requests.

When you use SIP to make a VoIP call, it originates at a client and terminates at a server. A SIP client could be a computer or a SIP phone. One device can act as both a SIP client and a SIP server.

SIP User Agent

A SIP user agent can make and receive VoIP telephone calls. This means that SIP can be used for peer-to-peer communications even though it is a client-server protocol. In the following figure, either **A** or **B** can act as a SIP user agent client to initiate a call. **A** and **B** can also both act as a SIP user agent to receive the call.

Figure 133 SIP User Agent

SIP Proxy Server

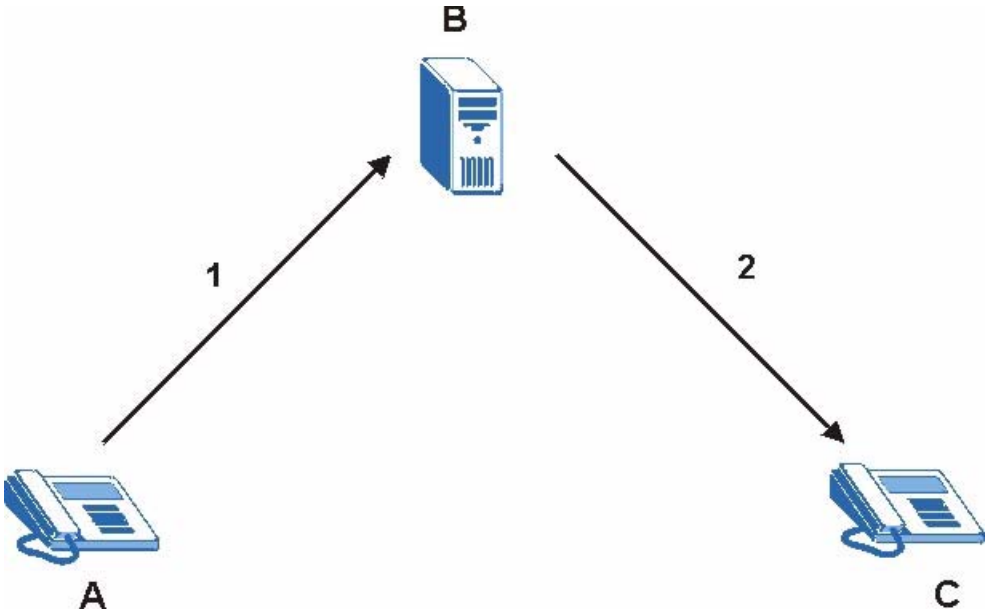
A SIP proxy server receives requests from clients and forwards them to another server.

In the following example, you want to use client device **A** to call someone who is using client device **C**.

1 The client device (**A** in the figure) sends a call invitation to the SIP proxy server (**B**).

2 The SIP proxy server forwards the call invitation to **C**.

Figure 134 SIP Proxy Server



SIP Redirect Server

A SIP redirect server accepts SIP requests, translates the destination address to an IP address and sends the translated IP address back to the device that sent the request. Then the client device that originally sent the request can send requests to the IP address that it received back from the redirect server. Redirect servers do not initiate SIP requests.

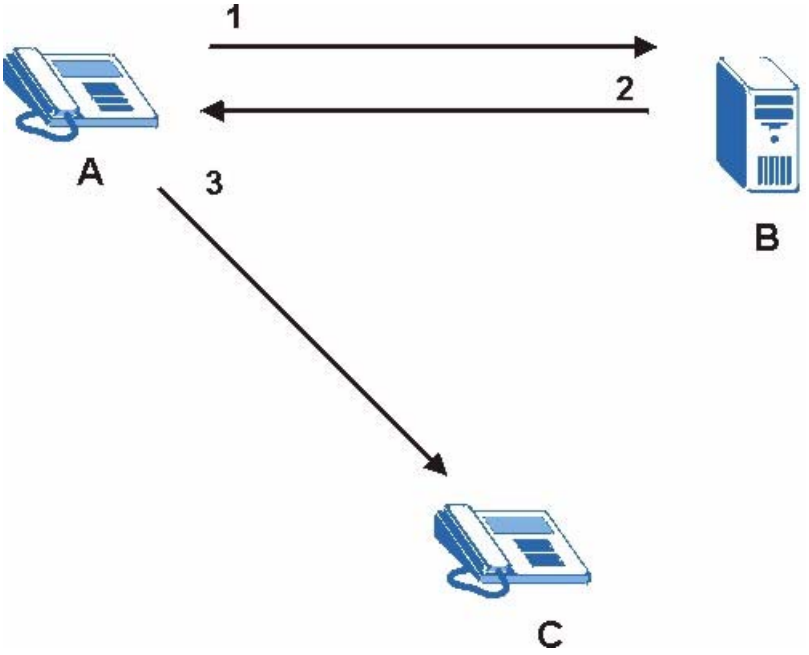
In the following example, you want to use client device **A** to call someone who is using client device **C.**

1 Client device **A** sends a call invitation for **C** to the SIP redirect server (**B**).

2 The SIP redirect server sends the invitation back to **A** with **C**'s IP address (or domain name).

3 Client device **A** then sends the call invitation to client device **C**.

Figure 135 SIP Redirect Server



SIP Register Server

A SIP register server (also known as a registrar server) maintains a database of SIP identity-to-IP address (or domain name) mapping. The register server checks your user name and password when you register.

RTP

When you make a VoIP call using SIP, the RTP (Real time Transport Protocol) is used to handle voice data transfer. See RFC 1889 for details on RTP.

NAT and SIP

NAT (Network Address Translation - NAT, RFC 1631) is the translation of the IP address of a host in a packet, for example, the source address of an outgoing packet, used within one network to a different IP address known within another network.

The V500 must register its public IP address with a SIP register server. If there is a NAT router between the V500 and the SIP register server, the V500 probably has a private IP address. The V500 lists its IP address in the SIP message that it sends to the SIP register server. NAT does not translate this IP address in the SIP message. The SIP register server gets the V500's IP address from inside the SIP message and maps it to your SIP identity. If the V500 has a private IP address listed in the SIP message, the SIP server cannot map it to your SIP identity.

Use STUN or outbound proxy to allow the V500 to list its public IP address in the SIP messages.

STUN

STUN (Simple Traversal of User Datagram Protocol (UDP) through Network Address Translators) allows the V500 to find the presence and types of NAT routers and/or firewalls between it and the public Internet. STUN also allows the V500 to find the public IP address that NAT assigned, so the V500 can embed it in the SIP data stream. STUN does not work with symmetric NAT routers or firewalls. See RFC 3489 for details on STUN.

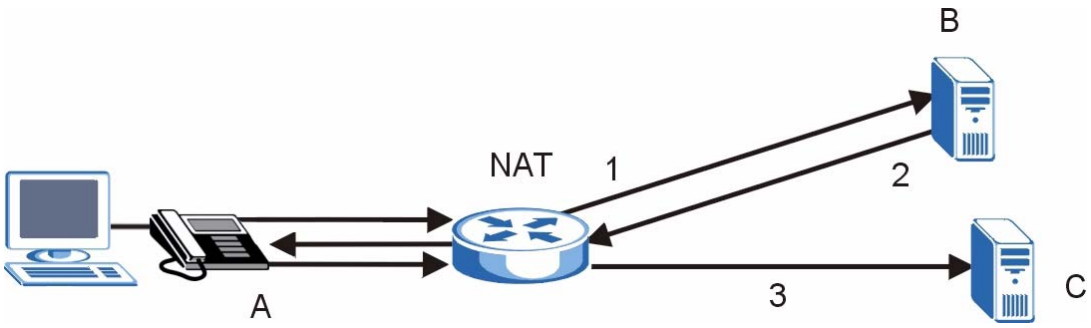
The following figure shows how STUN works.

1 The V500 (**A**) sends SIP packets to the STUN server (**B**).

2 The STUN server (**B**) finds the public IP address and port number that the NAT router used on the V500's SIP packets and sends them to the V500.

3 The V500 uses the public IP address and port number in the SIP packets that it sends to the SIP server (**C**).

Figure 136 STUN



Outbound Proxy

Your VoIP service provider may host a SIP outbound proxy server to handle all of the V500's VoIP traffic. This allows the V500 to work with any type of NAT router and eliminates the need for STUN or a SIP ALG. Turn off a SIP ALG on a NAT router in front of the V500 to keep it from retranslating the IP address (since this is already handled by the outbound proxy server).

Voice Coding

A codec (coder/decoder) codes analog voice signals into digital signals and decodes the digital signals back into voice signals. The V500 supports the following codecs.

- **G.711** is a Pulse Code Modulation (PCM) waveform codec. PCM measures analog signal amplitudes at regular time intervals (sampling) and converts them into digital bits (quantization). Quantization “reads” the analog signal and then “writes” it to the nearest digital value. For this reason, a digital sample is usually slightly different from its analog original (this difference is known as “quantization noise”).

  G.711 provides very good sound quality but requires 64kbps of bandwidth.

- **G.722** is an Adaptive Differential Pulse Code Modulation (ADPCM) waveform codec. Differential (or Delta) PCM is similar to PCM, but encodes the audio signal based on the difference between one sample and a prediction based on previous samples, rather than encoding the sample’s actual quantized value. Many thousands of samples are taken each second, and the differences between consecutive samples are usually quite small, so this saves space and reduces the bandwidth necessary.

  However, DPCM produces a high quality signal (high signal-to-noise ratio or SNR) for high difference signals (where the actual signal is very different from what was predicted) but a poor quality signal (low SNR) for low difference signals (where the actual signal is very similar to what was predicted). This is because the level of quantization noise is the same at all signal levels. Adaptive DPCM solves this problem by adapting the difference signal’s level of quantization according to the audio signal’s difference level. A low difference signal is given a higher quantization level, increasing its signal-to-noise ratio. This provides a similar sound quality at all signal levels.

  G.722 samples audio at 16 kHz; twice the traditional rate of 8 kHz. G.722 provides excellent quality audio and requires 48 to 64 kbps.

- **G.723.1** is a Code Excited Linear Prediction (CELP) codec that compresses voice audio in 30 ms frames. G.723.1 operates at two bitrates: 6.3 kbps when sampling at 24 bytes or 5.3 kbps when sampling at 20 bytes per 30 ms frame.

- **G.726** is an ADPCM waveform codec that uses a lower bitrate than standard PCM conversion. G.726 operates at 16, 24, 32 or 40 kbps.

- **G.729** is an Analysis-by-Synthesis (AbS) hybrid waveform codec. It uses a filter based on information about how the human vocal tract produces sounds. The codec analyzes the incoming voice signal and attempts to synthesize it using its list of voice elements. It tests the synthesized signal against the original and, if it is acceptable, transmits details of the voice elements it used to make the synthesis. Because the codec at the receiving end has the same list, it can exactly recreate the synthesized audio signal.

  G.729 provides good sound quality and reduces the required bandwidth to 8kbps.

PSTN Call Setup Signaling

PSTNs (Public Switched Telephone Networks) use DTMF or pulse dialing to set up telephone calls.

Dual-Tone Multi-Frequency (DTMF) signaling uses pairs of frequencies (one lower frequency and one higher frequency) to set up calls. It is also known as Touch

Tone. Each of the keys on a DTMF telephone corresponds to a different pair of frequencies.

Pulse dialing sends a series of clicks to the local phone office in order to dial numbers.

MWI (Message Waiting Indication)

Enable Message Waiting Indication (MWI) enables your phone to give you a message–waiting (beeping) dial tone when you have one or more voice messages. Your VoIP service provider must have a messaging system that sends message-waiting-status SIP packets as defined in RFC 3842.

Quality of Service (QoS)

Quality of Service (QoS) refers to both a network's ability to deliver data with minimum delay and the networking methods used to provide bandwidth for real-time multimedia applications.

Type Of Service (ToS)

Network traffic can be classified by setting the ToS (Type Of Service) values at the data source (for example, at the V500) so a server can decide the best method of delivery, that is the least cost, fastest route and so on.

DiffServ

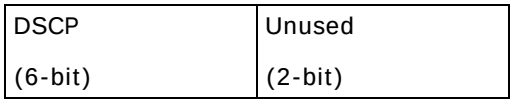
DiffServ is a class of service (CoS) model that marks packets so that they receive specific per-hop treatment at DiffServ-compliant network devices along the route based on the application types and traffic flow. Packets are marked with DiffServ Code Points (DSCPs) indicating the level of service desired. This allows the intermediary DiffServ-compliant network devices to handle the packets differently depending on the code points without the need to negotiate paths or remember state information for every flow. In addition, applications do not have to request a particular service or give advanced notice of where the traffic is going.

DSCP and Per-Hop Behavior

DiffServ defines a new DS (Differentiated Services) field to replace the Type of Service (TOS) field in the IP header. The DS field contains a 2-bit unused field and

a 6-bit DSCP field which can define up to 64 service levels. The following figure illustrates the DS field.

Figure 137 DiffServ: Differentiated Service Field



DSCP is backward compatible with the three precedence bits in the ToS octet so that non-DiffServ compliant, ToS-enabled network device will not conflict with the DSCP mapping.

The DSCP value determines the forwarding behavior, the PHB (Per-Hop Behavior), that each packet gets across the DiffServ network. Based on the marking rule, different kinds of traffic can be marked for different priorities of forwarding. Resources can then be allocated according to the DSCP values and the configured policies.

VLAN

Virtual Local Area Network (VLAN) allows a physical network to be partitioned into multiple logical networks. Only stations within the same group can communicate with each other.

Your V500 can add IEEE 802.1Q VLAN ID tags to voice frames that it sends to the network. This allows the V500 to communicate with a SIP server that is a member of the same VLAN group. Some ISPs use the VLAN tag to identify voice traffic and give it priority over other traffic.

12

Phone Setup

12.1 Overview

This chapter discusses the V500's **Phone** screens.

12.1.1 What You Can Do in This Chapter

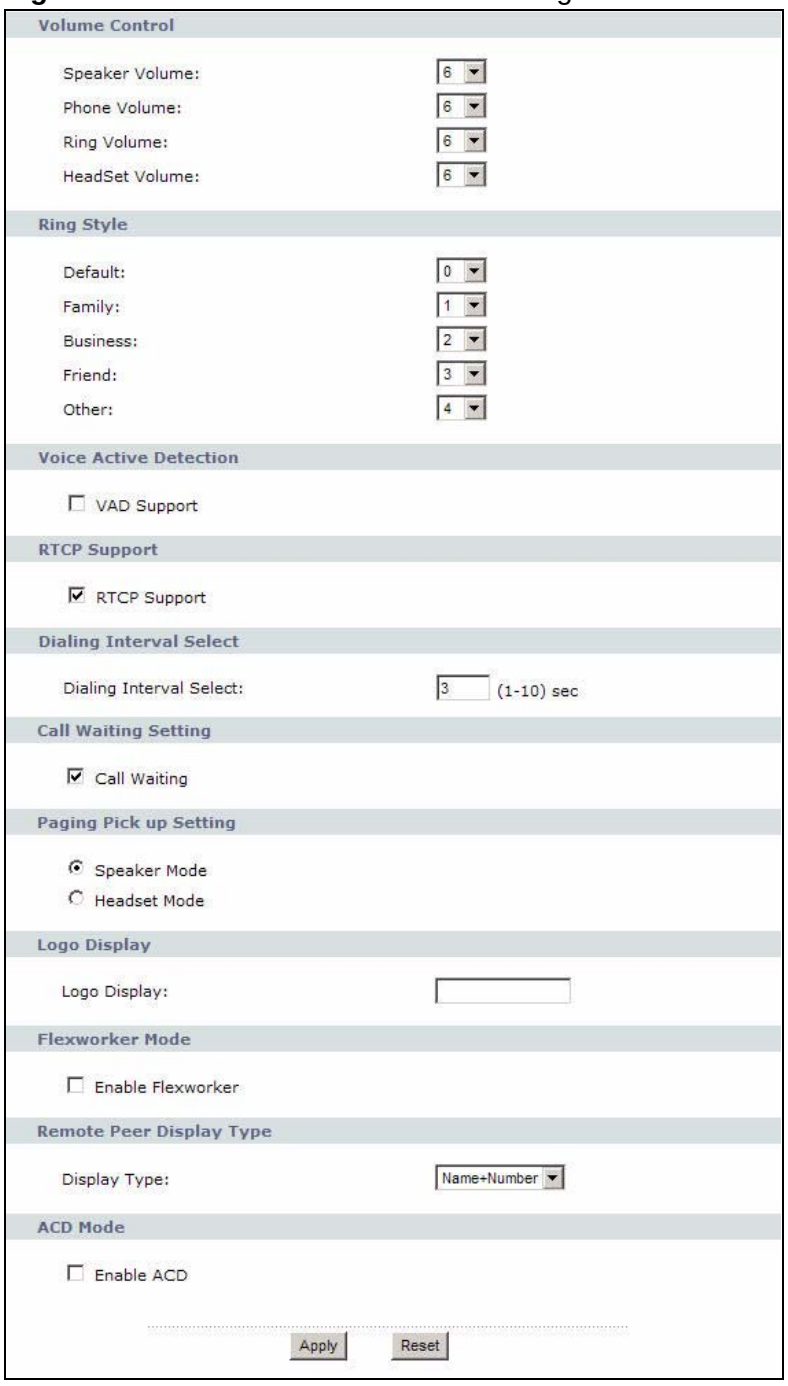
- The **Phone Settings** screen allows you to configure basic phone settings like volume and ring tones (Section 12.2 on page 224).
- The **Phone Region** screen allows you to maintain settings that depend on which region of the world the V500 is in (Section 12.3 on page 227).
- The **Speed Dial Settings** screen allows you to map a phone number to an alphanumeric keypad key and then use that key to call the phone number (Section 12.4 on page 227).
- The **Programmable Feature Key Settings** screen allows you to program the custom keys on the V500 to control certain supplementary call services (Section 12.5 on page 228).

12.2 Phone Settings Screen

Use this screen to configure basic phone settings like volume and ring tones.

Click **VoIP** > **Phone** > **Phone Settings**. The following screen displays.

Figure 138 VoIP > Phone > Phone Settings



Each field is described in the following table.

Table 122 VoIP > Phone > Phone Settings

LABEL	DESCRIPTION
Volume Control	
Speaker Volume	Select this to set the internal speakerphone volume. This controls both the internal speaker and the internal microphone. **0** is the quietest and **12** is the loudest.
Phone Volume	Select this to set the handset volume. This controls both the handset's speaker and its microphone. **0** is the quietest and **12** is the loudest.
Ring Volume	Select this to set the volume of the V500's ringtone. This setting applies to all configured group rings. **0** is the quietest and **12** is the loudest.
Headset Volume	Select this to set the volume of an attached headset (or any device connected to the external speaker and/or microphone sockets). This controls both the handset's speaker (earpiece) and its microphone. **0** is the quietest and **12** is the loudest.
Ring Style	
Default	Select the ringtone the V500 uses when an incoming call is not from a member of any group.
Family / Business / Friend / Other	Select the ringtone the V500 uses when an incoming call is from a member of that group.
Voice Active Detection	
VAD Support	Select this if the V500 should stop transmitting when you are not speaking. This reduces the bandwidth the V500 uses.
RTCP Support	
RTCP Support	Select this option if you want the V500 to transmit its connection statistics to the IP PBX. Doing this may increase the device's bandwidth. A single device should not make much of an impact but enough devices on a network using RTCP could. When activated, the VoIP Statistics screen displays more comprehensive data based on the data gathered with RTCP. See Section 9.2.2 on page 197 for more information.
Dialing Interval Select	
Dialing Interval Select: (1-10 sec)	Enter the number of seconds the V500 should wait after you stop dialing numbers before it places the call.
Call Waiting Setting	
Call Waiting	Select this to enable the call waiting feature. Call waiting allows you to put a present call on hold and answer a new call.

Table 122 VoIP > Phone > Phone Settings

LABEL	DESCRIPTION
Paging Pick Up Setting	
Speaker Mode	Select this if you want all pages to your phone to be automatically answered in speaker mode.
Handset Mode	Select this if you want all pages to your phone to be automatically answered in handset mode.
Logo Display	
Logo Display	Enter a word, such as a company name or slogan, to use as the logo that appears on the V500's LCD screen when it is at rest. You can type up to 15 alphanumeric characters.
Flexworker Mode	
Enable Flexworker	Select this to enable the Flexworker feature, which allows other people in the company to use this device in conjunction with their personal account settings. As soon as they log in, their account profile is uploaded from the IP PBX, including phone extension.
Remote Peer Display Type	
Display Type	Select the type of information displayed on your V500 LCD screen when you a receive a call. Options are: • **Full Content** - This displays all available caller ID information. • **Name+Number** - This displays the caller's name and number in that order. • **Number+Name** - This displays the caller's number and name in that order. • **Number Only** - This displays just the caller's number. • **Name Only** - This displays just the caller's name.
ACD Mode	
Enable ACD	Select this to enable ACD on this V500.
Apply	Click this to save your changes and to apply them to the V500.
Reset	Click this to set every field in this screen to its last-saved value.

12.2.1 Voice Activity Detection/Silence Suppression

Voice Activity Detection (VAD) detects whether or not speech is present. This lets the V500 reduce the bandwidth that a call uses by not transmitting "silent packets" when you are not speaking.

12.2.2 Comfort Noise Generation

When using VAD, the V500 generates comfort noise when the other party is not speaking. The comfort noise lets you know that the line is still connected as total silence could easily be mistaken for a lost connection.

12.3 Phone Region Screen

Use this screen to maintain settings that depend on which region of the world the V500 is in. To access this screen, click **VoIP > Phone > Region**.

Figure 139 VoIP > Phone > Region

Each field is described in the following table.

Table 123 VoIP > Phone > Region

LABEL	DESCRIPTION
Region Setting	
Region Settings	Select the place in which the V500 is located.
Apply	Click this to save your changes.
Reset	Click this to set this screen to its last-saved value.

12.4 Speed Dial Settings Screen

Speed dial provides shortcuts for dialing frequently used phone numbers. You can map a phone number to an alphanumeric keypad key (**1** to **9**) and then use that keypad key to call the phone number (press and hold the key for one second or longer). Use this screen to add, edit, or remove speed-dial numbers for outgoing calls.

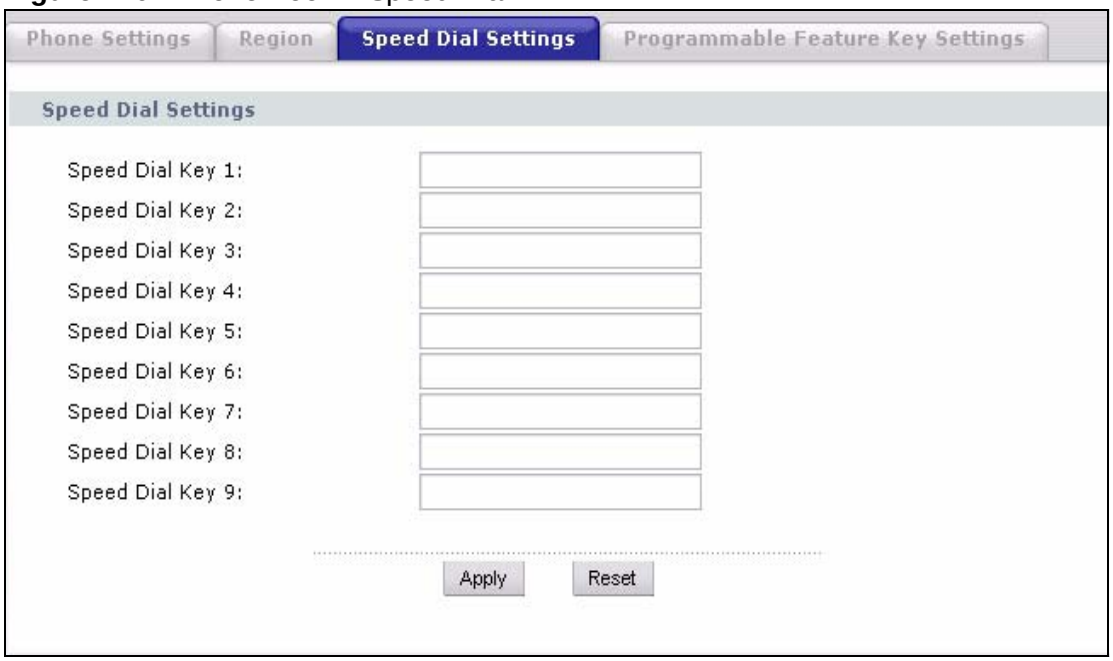
You also have to create speed-dial entries if you want to make peer-to-peer calls or call SIP numbers that use letters.

In peer-to-peer calls, you call another VoIP device directly without going through a SIP server. Enter the callee's IP address or domain name. The V500 sends SIP INVITE requests to the peer VoIP device when you use the speed dial entry.

You do not need to configure a SIP account in order to make a peer-to-peer VoIP call.

Click **VoIP > Phone > Speed Dial Settings**. The following screen displays.

Figure 140 Phone Book > Speed Dial



Each field is described in the following table.

Table 124 Phone Book > Speed Dial

LABEL	DESCRIPTION
Speed Dial Settings	
Speed Dial Key 1~ 9	Enter the phone number you want the V500 to call when you use this speed dial key.
Apply	Click this to save your settings.
Reset	Click this to set every field in this screen to its last-saved value.

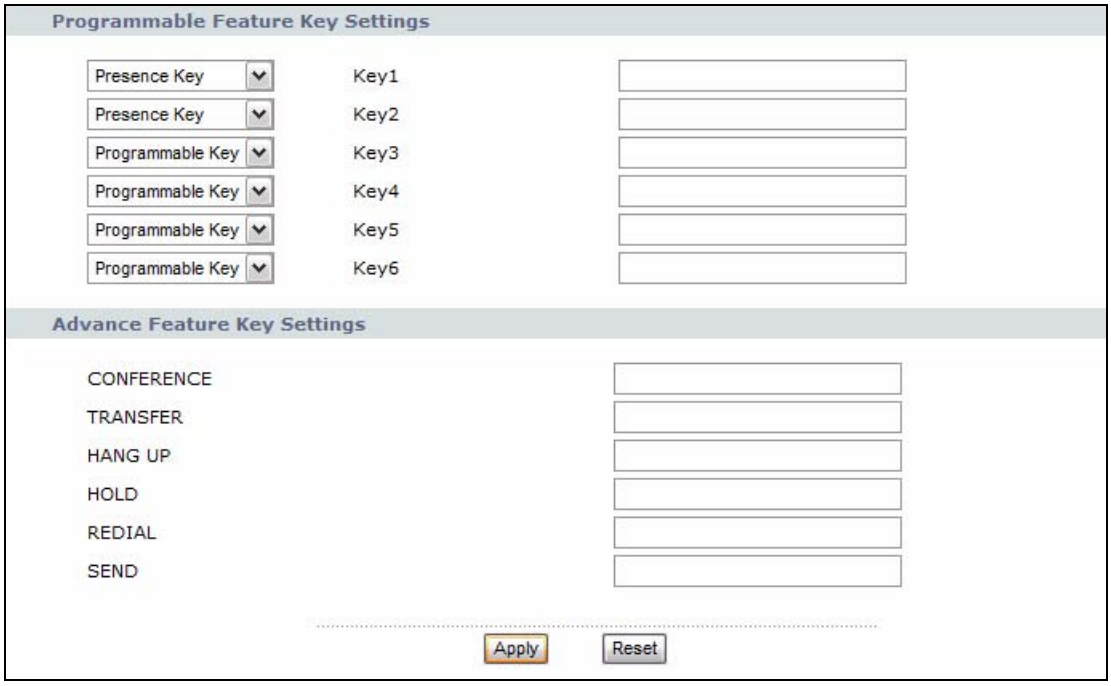
12.5 Programmable Feature Key Settings Screen

You can program the custom keys on the V500 to automatically control certain supplementary call services, such as caller ID, call forwarding, call waiting, etc. These services are generally available from your VoIP service provider. The call functions available, and the codes you use to control them, may differ from one service provider to another. Contact your service provider for details on feature codes and how to use them.

Note: To take full advantage of the supplementary phone services available, you may need to subscribe to them from your VoIP service provider.

Click **VoIP** > **Phone** > **Programmable Feature Key Settings**. The following screen displays.

Figure 141 VoIP > Phone > Programmable Feature Key Settings



The following table describes the labels in this screen.

Table 125 Phone Book > Programmable Feature Key Settings

LABEL	DESCRIPTION
Programmable Feature Key Settings	
Programmable Key 1 ~ 6	Enter the feature code you want the V500 to use when you press this feature key. Note: The rules in this screen are in the same order as the custom keys on the V500. **Programmable Key 1** refers to the top key, **Programmable Key 2** refers to the second-from-top key, and so on.
Presence Key 1 ~ 6	Enter the presence "state" you want your phone to broadcast to other phones on the network when you press this feature key. States are: • **Green** - indicates you are available or not busy. • **Flashing Green** - indicates you have an incoming call. • **Red** - indicates you are busy or not available. Note: If you leave a presence key blank then no presence state is sent to the network.

Table 125 Phone Book > Programmable Feature Key Settings

LABEL	DESCRIPTION
Advanced Feature Key Settings	
CONFERENCE ~ SEND	Enter the feature key number that you want to assign to this feature. Note: This remaps the default CONFERENCE ~ SEND keys on your phone and assigns their functions to the keypad numbers you assign here.
Apply	Click this to save your settings.
Reset	Click this to set every field in this screen to its last-saved value.

13

The Phone Book

13.1 Overview

This chapter discusses the **Phone Book** screens.

13.1.1 What You Can Do in This Chapter

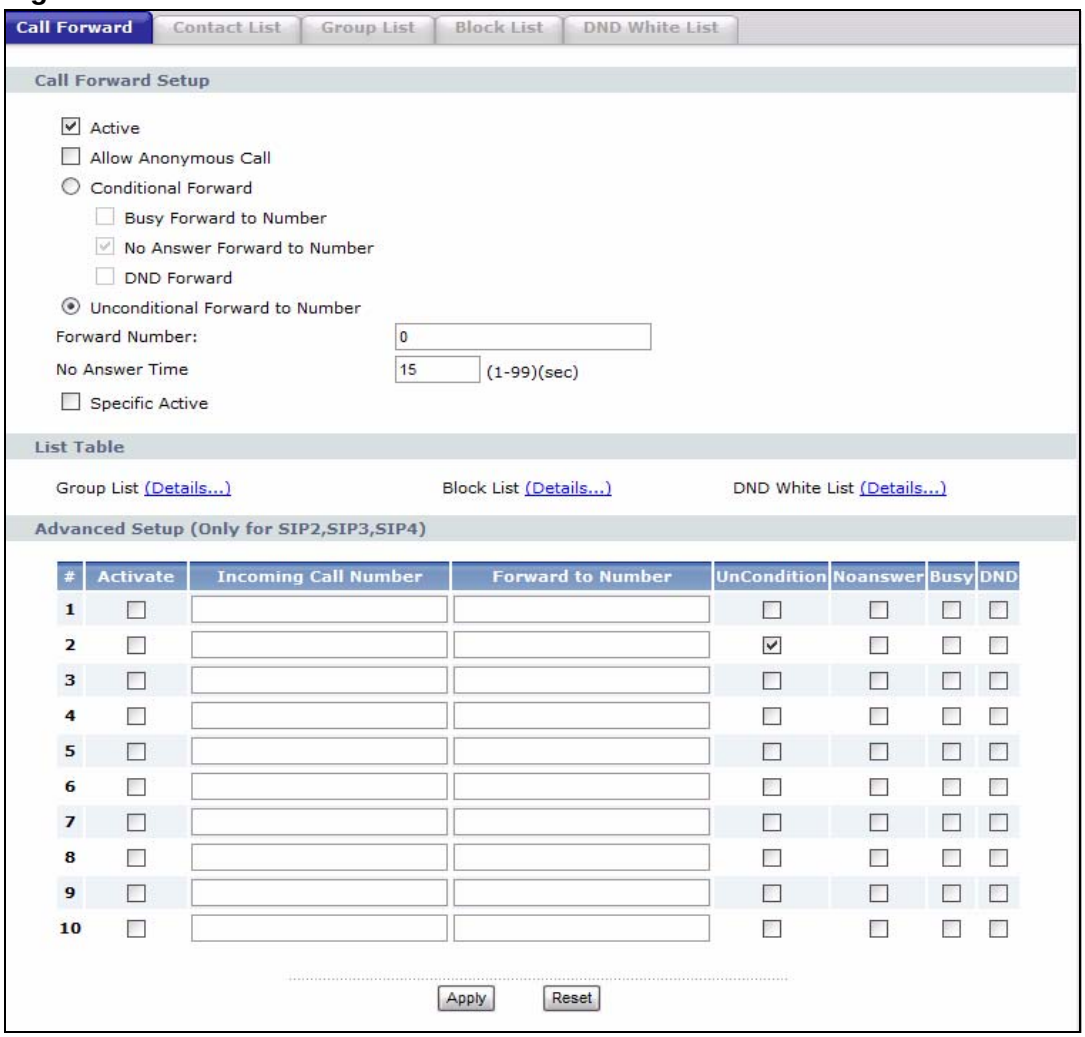
- The **Call Forward** screen allows you to configure call forwarding for incoming calls (Section 13.2 on page 232).
- The **Contact List** screen allows you to see, add and edit details of your contacts (Section 13.3 on page 234).
- The **Group List** screen allows you to see and edit the calling groups to which your phonebook contacts belong (Section 13.4 on page 236).
- The **Block List** screen allows you to see and edit details of the phone numbers that are prevented from making incoming calls to the V500 (Section 13.5 on page 237).
- The **DND White List** screen allows you to see and edit details of people who can make incoming calls to the V500 even when you have Do Not Disturb turned on (Section 13.6 on page 239).

13.2 Call Forward Screen

Use this screen to configure call forwarding for incoming calls. When call forwarding is active, incoming calls are redirected to other phone numbers. You can set up rules for all incoming calls, or have the V500 forward calls from specific numbers only.

Click **VoIP** > **Phone Book** > **Call Forward**. The following screen displays.

Figure 142 VoIP > Phone Book > Call Forward



The following table describes the labels in this screen.

Table 126 VoIP > Phone Book > Call Forward

LABEL	DESCRIPTION
Call Forward Setup	The V500 checks these rules, in the order in which they appear, after it checks the rules in the **Advanced Setup** section.
Active	Select this to turn call forwarding on. This setting applies to all call forwarding on the V500.

Table 126 VoIP > Phone Book > Call Forward (continued)

LABEL	DESCRIPTION
Allow Anonymous Call	Select this to allow incoming calls that do not carry caller ID. If you do not select this, the phone does not ring when someone tries to call you with caller ID deactivated.
Conditional Forward	Select this to forward all incoming calls under certain circumstances (if the phone is in use, if you do not answer, or if you have the Do Not Disturb function turned on).
Busy Forward to Number	Select this if you want the V500 to forward incoming calls to the specified phone number if the phone is busy (it does not matter which line is being used). Specify the phone number in the field on the right. If you have call waiting, the incoming call is forwarded to the specified phone number if you reject or ignore the second incoming call.
No Answer Forward to Number	Select this to forward all incoming calls if you do not answer the phone within the time you set in the **No Answer Time** field.
DND Forward	Select this to forward all incoming calls if you have DND (Do Not Disturb) turned on.
Unconditional Forward to Number	Select this if you want the V500 to forward all incoming calls to the specified phone number, regardless of other rules in the **Forward to Number** section. Specify the phone number in the **Forward Number** field.
Forward Number	Enter the phone number to which you want to forward incoming calls.
No Answer Time	This field is used by the **No Answer Forward to Number** feature and also the specific forwarding rules, if **No Answer** is selected. Enter the number of seconds the V500 should wait for you to answer an incoming call before it considers the call is unanswered.
Specific Active	Select this to turn on the specific call forwarding rules you set up in the **Advanced Setup** section of this screen. If you have **Conditional Forwarding** or **Unconditional Forwarding** turned on as well as specific call forwarding, the V500 applies the specific call forwarding rules first. If the incoming number does not match a specific call forwarding rule, the V500 applies the conditional or unconditional forwarding rule.
List Table	
Group List	Select this to see the phonebook entries belonging to each group.
Block List	Select this to see the phone numbers that are prevented from calling the V500.
DND White List	Select this to see which contacts (phonebook entries) are allowed to call the V500 even when DND (Do Not Disturb) is turned on.
Advanced Setup	The V500 checks these rules before it checks the rules in the **Call Forward Setup** section.
#	This field is a sequential value, and it is not associated with a specific rule. The sequence is important, however. The V500 checks each rule in order, and it only follows the first one that applies.
Activate	Select this to have the V500 use the specific call forwarding rule. Deselect it to ignore the rule.

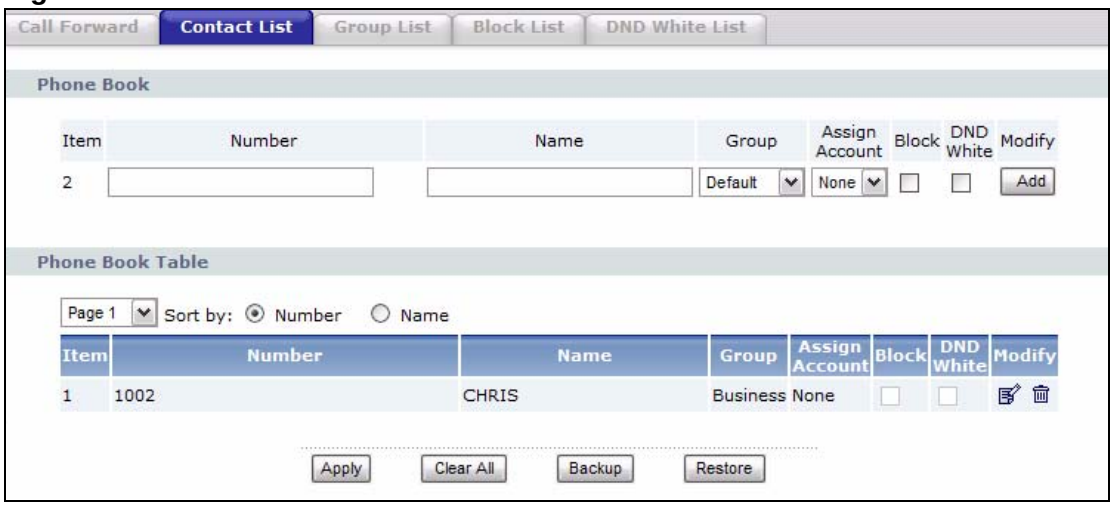
Table 126 VoIP > Phone Book > Call Forward (continued)

LABEL	DESCRIPTION
Incoming Call Number	Enter the incoming phone number to which you want this rule to apply.
Forward to Number	Enter the phone number to which you want to forward calls from this number
Uncondition	Select this to always forward incoming calls from this number.
NoAnswer	Select this to forward incoming calls from this number if you do not answer the phone within the time you set in the **No Answer Time** field.
Busy	Select this to forward incoming calls from this number if the V500 is in use. It does not matter which line is being used.
DND	Select this to forward incoming calls from this number if you have DND (Do Not Disturb) turned on.
Apply	Click this to save your settings.
Reset	Click this to set every field in this screen to its last-saved value.

13.3 Contact List Screen

Use this screen to see, add and edit details of your contacts. Click **VoIP** > **Phone Book** > **Contact List**. The following screen displays.

Figure 143 VoIP > Phone Book > Contact List



The following table describes the labels in this screen.

Table 127 VoIP > Phone Book > Contact List

LABEL	DESCRIPTION
Phone Book	
Item	This shows the index number of the list entry.
Number	Enter the contact's phone number.

Table 127 VoIP > Phone Book > Contact List (continued)

LABEL	DESCRIPTION
Name	Enter the contact's name.
Group	Select the group to which you want the contact to belong. You can then assign a different ring for incoming calls from each group. Alternatively, leave **Default** selected if you do not wish to assign the contact to a group.
Assign Account	Select the SIP account you want to use when calling this contact. Alternatively, leave **None** selected to use any SIP account.
Block	Select this if you want to prevent this contact from calling you.
DND White	Select this if you want this contact to be able to call you even when DND (Do Not Disturb) is turned on.
Modify	Click the **Add** button to include the new entry in the phonebook, or to save the changes you made to an existing entry.
Phone Book Table	
Page	Select a page from the list to go to that page of contacts.
Sort By	Select a sorting option. • **Number** - Sorts items in the list in numerical order, lowest to highest. • **Name** - Sorts items in the list in alphabetical order.
Item	This shows the index number of the contact's entry.
Number	This is the contact's phone number.
Name	This is the contact's name.
Group	This is the calling group to which the contact belongs.
Assign Account	This is the SIP account the V500 always uses to call this contact. This shows **None** if you can use any SIP account to call the contact.
Block	This is selected if this contact is prevented from calling you.
DND White	This is selected if this contact can call you even when DND (Do Not Disturb) is turned on.
Modify	Click the **Edit** icon to change this entry's details. Click the **Delete** icon to remove the entry from the phonebook. If you do this, the information cannot be recovered.
Apply	Click this to save your settings.
Clear All	Click this to remove all the entries from the phonebook. If you do this, the information cannot be recovered.
Backup	Click this to save a copy of the contact list to your computer.
Restore	Click this to **Browse** for a backed up copy of your contact list on your computer then **Upload** it to your phone.

13.4 Group List Screen

Use this screen to see and edit the calling groups to which your phonebook contacts belong.

Note: You can also edit this information in the **VoIP** > **Phone Book** > **Contact List** screen.

Click **VoIP** > **Phone Book** > **Group List**. The following screen displays.

Figure 144 VoIP > Phone Book > Group List

The following table describes the labels in this screen.

Table 128 VoIP > Phone Book > Group List

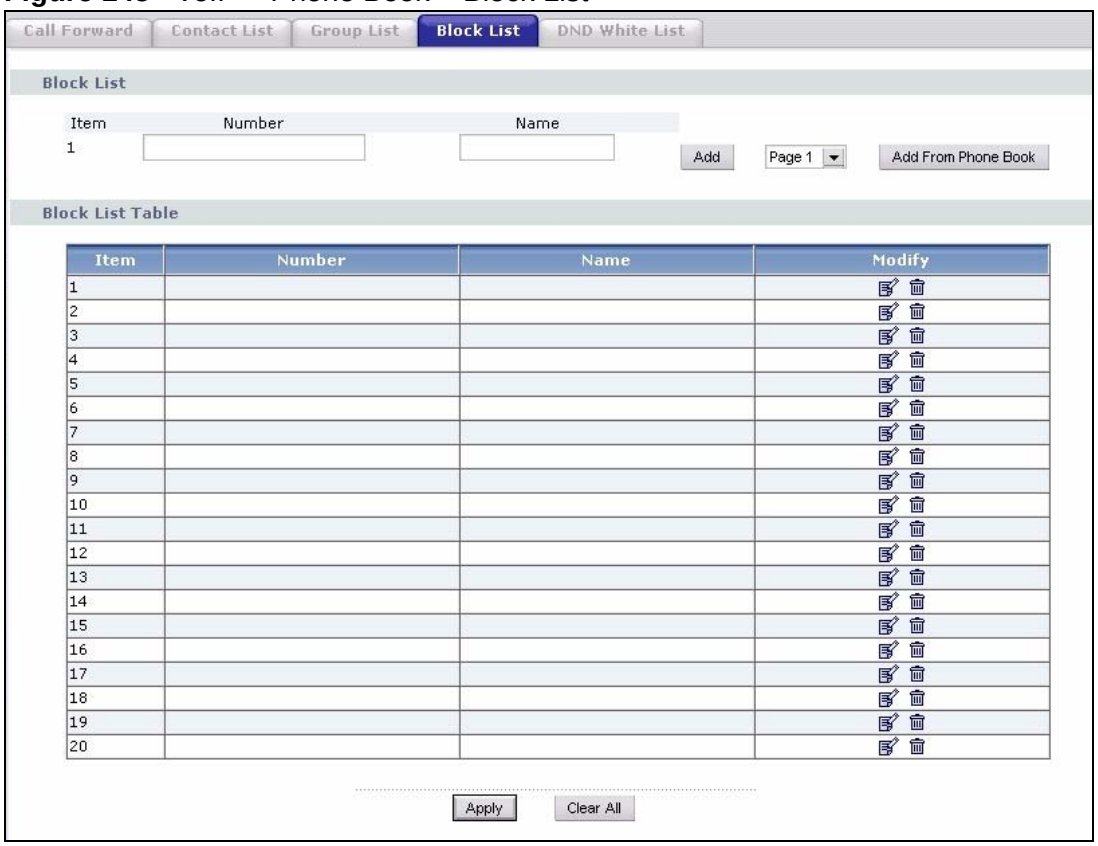
LABEL	DESCRIPTION
Group List	
Group	Select the calling group you want to see. The list of group members displays in the **Group List Table**.
Group List Table	
Item	This is the index number of the group member's list entry.
Number	This is the contact's phone number.
Name	This is the contact's name.
Group	Select an entry from the list to move the contact to another group.
Assign Account	This shows the SIP account the V500 uses to call this contact, or **None** if you can use any account to call the contact.
Block	This is selected if the contact is prevented from calling you.
Apply	Click this to save your changes.
Reset	Click this to return to the fields in this screen to their last-saved values.

13.5 Block List Screen

Use this screen to see and edit details of the phone numbers that are prevented from making incoming calls to the V500. You can block up to 20 phone numbers.

Click **VoIP** > **Phone Book** > **Block List**. The following screen displays.

Figure 145 VoIP > Phone Book > Block List



The following table describes the labels in this screen.

Table 129 VoIP > Phone Book > Block List

LABEL	DESCRIPTION
Block List	
Item	This is the index number of the block list entry.
Number	Enter the phone number you want to block.
Name	Enter a name for this entry, or leave this field blank.
Add	Click this to include the details you entered into the block list.
Page	If you want to add an entry to the block list from the phonebook, select the entry's phonebook page and click **Add From Phone Book**.
Add From Phone Book	Click this to select an entry from the phonebook page shown in the **Page** field. The list of contact numbers displays. Click on the number you want to block.

Table 129 VoIP > Phone Book > Block List (continued)

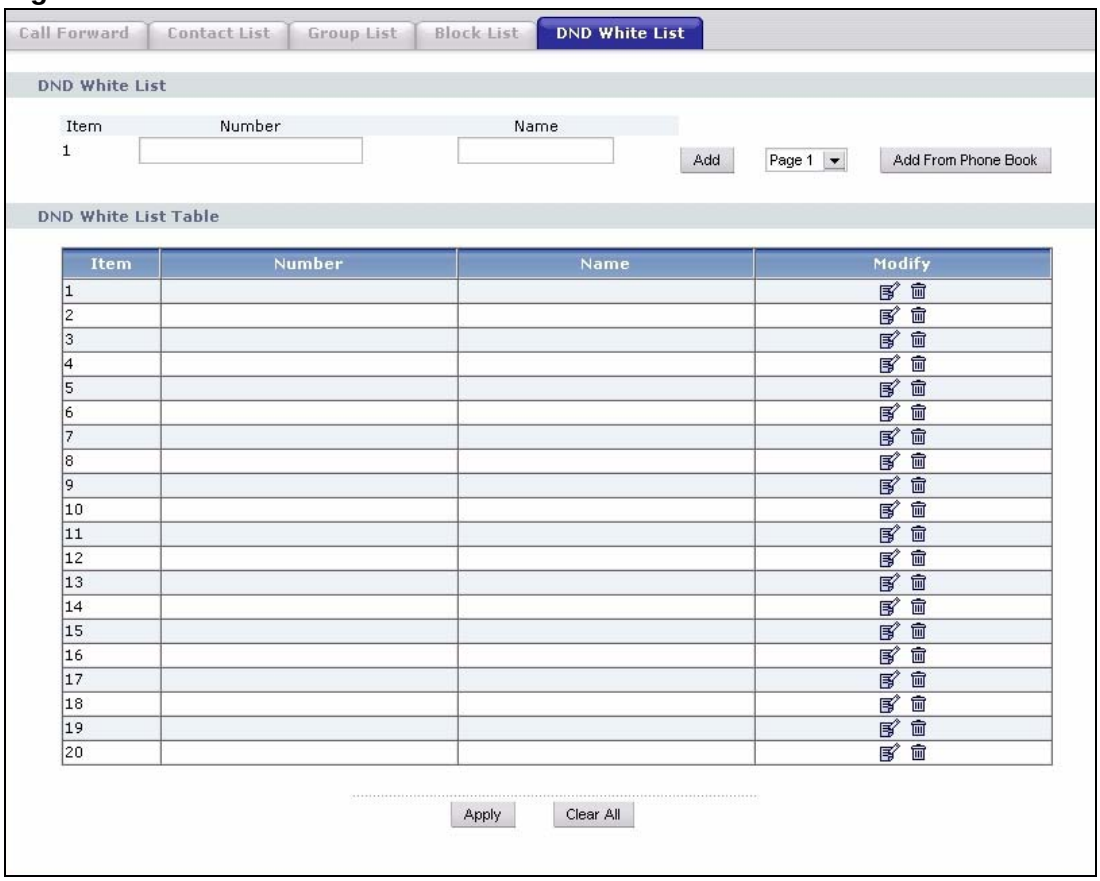
LABEL	DESCRIPTION
Block List Table	
Item	This is the index number of the block list entry.
Number	This is the block list entry's phone number. Incoming calls from this phone number are prevented from calling you.
Name	This is the name associated with the blocked phone number, if configured.
Modify	Click the **Edit** icon to change this entry's details. Click the **Delete** icon to remove the entry from the block list. If you do this for an entry not in the phonebook, the information cannot be recovered.
Apply	Click this to save your settings.
Clear All	Click this to remove all the entries from the block list. If you do this for entries not in the phonebook, the information cannot be recovered.

13.6 DND White List Screen

Use this screen to see and edit details of people who can make incoming calls to the V500 even when you have DND (Do Not Disturb) turned on.

Click **VoIP** > **Phone Book** > **DND White List**. The following screen displays.

Figure 146 VoIP > Phone Book > DND White List



The following table describes the labels in this screen.

Table 130 VoIP > Phone Book > DND White List

LABEL	DESCRIPTION
DND White LIst	
Item	This is the index number of the DND white list entry.
Number	Enter the phone number you want to add to the list.
Name	Enter a name for this entry, or leave this field blank.
Add	Click this to include the details you entered into the DND white list.
Page	If you want to add an entry to the DND white list from the phonebook, select the entry's phonebook page and click **Add From Phone Book**.

Table 130 VoIP > Phone Book > DND White List (continued)

LABEL	DESCRIPTION
Add From Phone Book	Click this to select an entry from the phonebook page shown in the **Page** field. The list of contact numbers displays. Click on the number you want to add.
DND White List Table	
Item	This is the index number of the DND white list entry.
Number	This is the list entry's phone number. Incoming calls from this phone number can call you even when DND is turned on.
Name	This is the name associated with the entry's phone number, if configured.
Modify	Click the **Edit** icon to change this entry's details. Click the **Delete** icon to remove the entry from the DND white list. If you do this for an entry not in the phonebook, the information cannot be recovered.
Apply	Click this to save your settings.
Clear All	Click this to remove all the entries from the DND white list. If you do this for entries not in the phonebook, the information cannot be recovered.

14

System

14.1 Overview

Use the System screens to change the V500's system and domain name settings, change the password or configure time settings.

14.1.1 What You Can Do in This Chapter

- The **General** screen allows you to change system settings and the web configurator password, or to set the administrator inactivity timer (Section 14.2 on page 241).
- The **Time Setting** screen allows you to change your V500's time and date (Section 14.3 on page 244).
- The **Dynamic DNS** screen allows you to map your current dynamic IP address with one or many dynamic DNS services so that anyone can contact you (Section 14.4 on page 246).
- The **Clock Alarm Setting** screen allows you to change your V500's time and date (Section 14.5 on page 248).

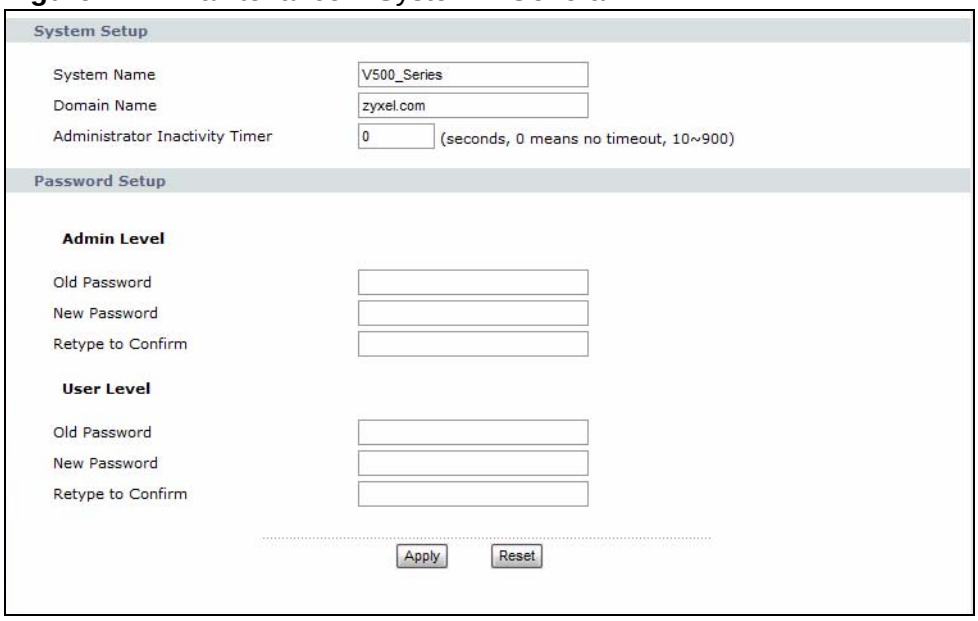
14.2 The General Screen

Use this screen to change system settings and the web configurator password, or to set the administrator inactivity timer.

Note: If you forget your password you will need to reset the device. See your Quick Start Guide for details.

Click **Maintenance** > **System** > **General**. The following screen displays.

Figure 147 Maintenance > System > General



The following table describes the labels in this screen.

Table 131 Maintenance > System > General

LABEL	DESCRIPTION
System Setup	
System Name	System Name is a unique name to identify the V500 in an Ethernet network. It is recommended you enter your computer's "Computer name" in this field. This name can be up to 30 alphanumeric characters long. Spaces are not allowed, but dashes "-" and underscores "_" are accepted.
Domain Name	Enter the domain name (if you know it) here. If you leave this field blank, the ISP may assign a domain name via DHCP. The domain name entered by you is given priority over the ISP-assigned domain name.
Administrator Inactivity Timer	Type how many minutes a management session can be left idle before the session times out. After it times out you have to log in with your password again. Very long idle timeouts may have security risks. The default is 0 minutes, which means a management session never times out, no matter how long it has been left idle.
Password Setup	
Admin Level	This section is for the administrator password.
Old Password	Type in your existing admin password ("1234" is the default password).

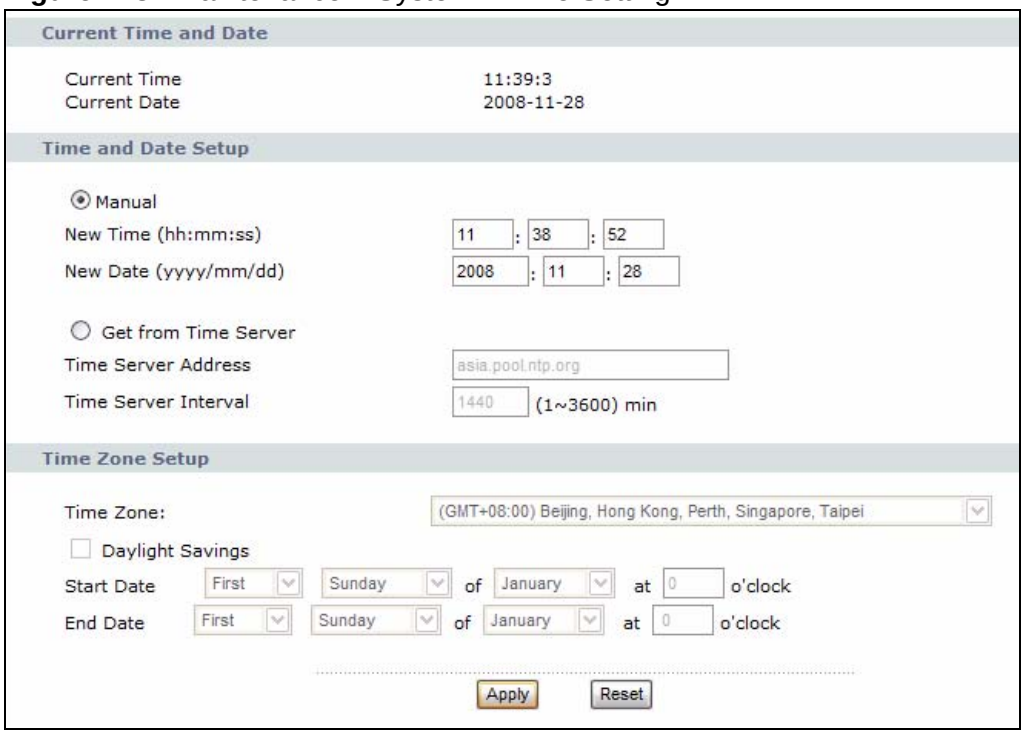
Table 131 Maintenance > System > General (continued)

LABEL	DESCRIPTION
New Password	Type your new admin password. Note: The new password must be between 4 and 8 numerals (0 ~ 9) long. Letters, spaces and other characters are not allowed. Note that as you type a password, the screen displays an asterisk (*) for each character you type.
Retype to Confirm	Retype your new admin password for confirmation.
User Level	This section is for the user password.
Old Password	Type in your existing user password (“1234” is the default password).
New Password	Type your new user password. Note: The new password must be between 4 and 8 numerals (0 ~ 9) long. Letters, spaces and other characters are not allowed. Note that as you type a password, the screen displays an asterisk (*) for each character you type.
Retype to Confirm	Retype your new user password for confirmation.
Apply	Click this to save your changes back to the device.
Reset	Click this to reload the previous configuration for this screen.

14.3 Time Setting Screen

To change your V500's time and date, click **Maintenance** > **System** > **Time Setting**. The screen appears as shown. Use this screen to configure the V500's time based on your local time zone.

Figure 148 Maintenance > System > Time Setting



The following table describes the labels in this screen.

Table 132 Maintenance > System > Time Setting

LABEL	DESCRIPTION
Current Time and Date	
Current Time	This field displays the time of your V500. Each time you reload this page, the V500 synchronizes the time with the time server.
Current Date	This field displays the date of your V500. Each time you reload this page, the V500 synchronizes the date with the time server.
Time and Date Setup	
Manual	Select this to enter the time and date manually. If you configure a new time and date, Time Zone and Daylight Saving at the same time, the new time and date you entered has priority and the Time Zone and Daylight Saving settings do not affect it.

Table 132 Maintenance > System > Time Setting (continued)

LABEL	DESCRIPTION
New Time (hh:mm:ss)	This field displays the last updated time from the time server or the last time configured manually. When you set **Time and Date Setup** to **Manual**, enter the new time in this field and then click **Apply**.
New Date (yyyy/mm/dd)	This field displays the last updated date from the time server or the last date configured manually. When you set **Time and Date Setup** to **Manual**, enter the new date in this field and then click **Apply**.
Get from Time Server	Select this to have the V500 get the time and date from the time server you specify below.
Time Server Address	Select **User Defined Time Server Address** and enter the IP address or URL (up to 20 characters in length) of your time server. Check with your ISP/network administrator if you are unsure of this information.
Time Server Interval	Enter the duration between time checks. The V500 will only ping the time server to update itself once every *x* minutes where *x* is the value you enter here.
Time Zone Setup	
Time Zone	Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
Daylight Savings	Daylight saving is a period from late spring to early fall when many countries set their clocks ahead of normal local time by one hour to give more daytime light in the evening. Select this option if you use Daylight Saving Time.
Start Date	Configure the day and time when Daylight Saving Time starts if you selected **Daylight Savings**. The **o'clock** field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time starts in most parts of the United States on the first Sunday of April. Each time zone in the United States starts using Daylight Saving Time at 2 A.M. local time. So in the United States you would select **First**, **Sunday**, **April** and type 2 in the **o'clock** field. Daylight Saving Time starts in the European Union on the last Sunday of March. All of the time zones in the European Union start using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select **Last**, **Sunday**, **March**. The time you type in the **o'clock** field depends on your time zone. In Germany for instance, you would type 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).

Table 132 Maintenance > System > Time Setting (continued)

LABEL	DESCRIPTION
End Date	Configure the day and time when Daylight Saving Time ends if you selected **Daylight Savings**. The **o'clock** field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time ends in the United States on the last Sunday of October. Each time zone in the United States stops using Daylight Saving Time at 2 A.M. local time. So in the United States you would select **Last**, **Sunday**, **October** and type 2 in the **o'clock** field. Daylight Saving Time ends in the European Union on the last Sunday of October. All of the time zones in the European Union stop using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select **Last**, **Sunday**, **October**. The time you type in the **o'clock** field depends on your time zone. In Germany for instance, you would type 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).
Apply	Click this to save your changes back to the V500.
Reset	Click this to begin configuring this screen afresh.

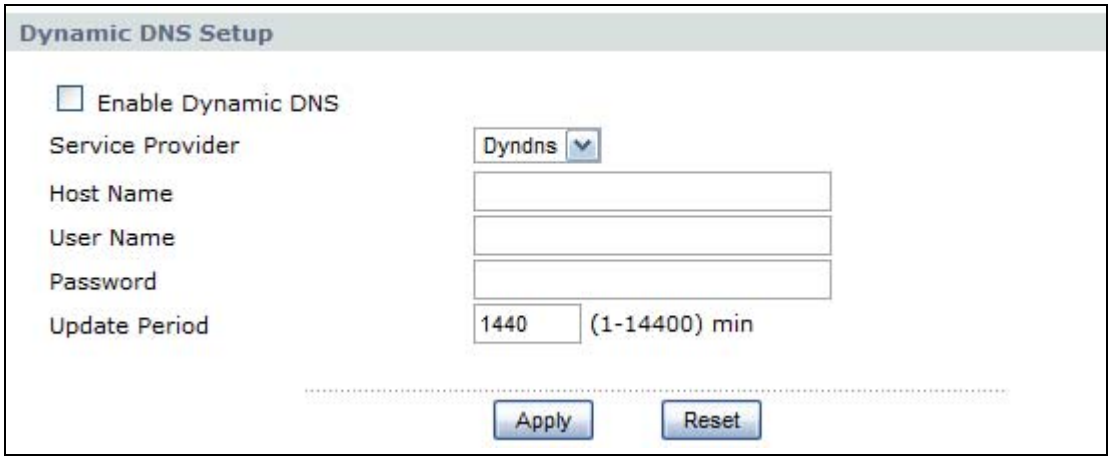
14.4 Dynamic DNS

Dynamic DNS allows you to map your current dynamic IP address with one or many dynamic DNS services so that anyone can contact you. SIP IP phones can access the SIP server on the V500 using a domain name (for instance myhost.dhs.org, where myhost is a name of your choice) that will never change instead of using an IP address that changes each time you reconnect.

First of all, you need to have registered a dynamic DNS account with www.dyndns.org. This is for people with a dynamic IP from their ISP or DHCP server that would still like to have a domain name. The Dynamic DNS service provider will give you a password or key.

Click **Maintenance** > **System** > **Dynamic DNS.** The screen appears as shown. Use this screen to change your V500's DDNS settings.

Figure 149 Maintenance > DDNS



The following table describes the labels in this screen.

Table 133 Maintenance > System > DDNS

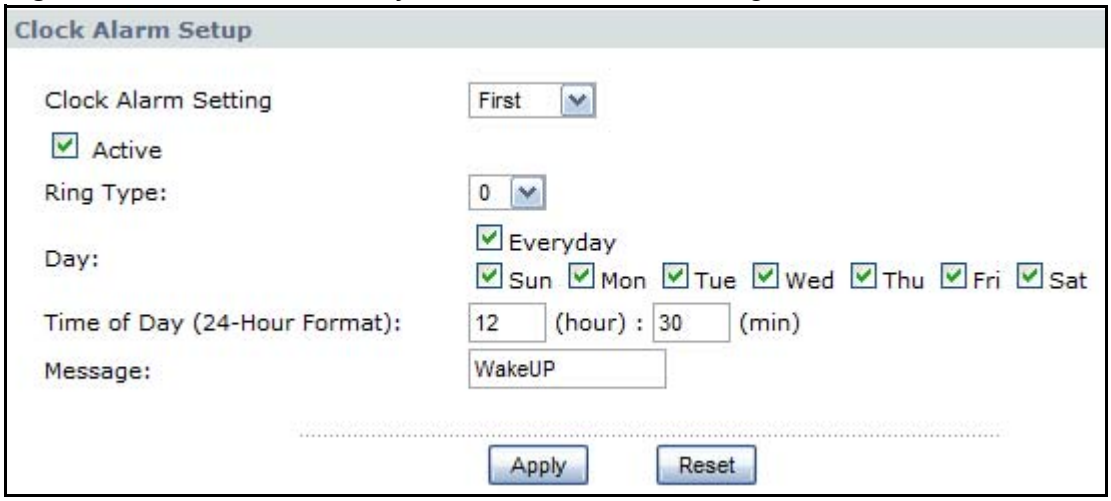
LABEL	DESCRIPTION
Enable Dynamic DNS	Select this to allow the V500 to use DDNS.
Service Provider	Select the type of service that you are registered for with your Dynamic DNS service provider.
Host name	Type the host name assigned to your V500 by your Dynamic DNS provider.
User Name	Type your user name.
Password	Type the password assigned to you.
Update Period	Enter the number of minutes that pass before the V500 checks to see whether the public IP address on the DDNS matches the device's current IP address. If not, the V500 updates itself.
Apply	Click this to save your changes.
Reset	Click this to set every field in this screen to its last-saved value.

14.5 Clock Alarm Setting

Click **Maintenance** > **System** > **Clock Alarm Setting**. The screen appears as shown. Use this screen to configure the V500's clock alarm schedule.

Note: The three alarms must have different configurations. You cannot have two or three identical alarms.

Figure 150 Maintenance > System > Clock Alarm Setting



The following table describes the labels in this screen.

Table 134 Maintenance > System > Clock Alarm Setting

LABEL	DESCRIPTION
Clock Alarm Setting	Select one of three available clock alarms to configure.
Active	Check this to enable the currently selected clock alarm.
Ring Type	Choose a ring type for the currently selected clock alarm. There are 12 available clock alarm ring types.
Day	Choose a day (or number of days) on which the clock alarm will be triggered.
Time of Day (24-Hour Format)	Enter the time of day for the clock alarm to be triggered.
Message	Enter the text message that appears on screen when the clock alarm is triggered. You can enter up to 14 alphanumeric characters (a-z, A-Z, 0-9) and spaces are not allowed.
Apply	Click this to save your changes.
Reset	Click this to set every field in this screen to its last-saved value.

15 Logs

15.1 Overview

This chapter contains information on viewing your V500's logs.

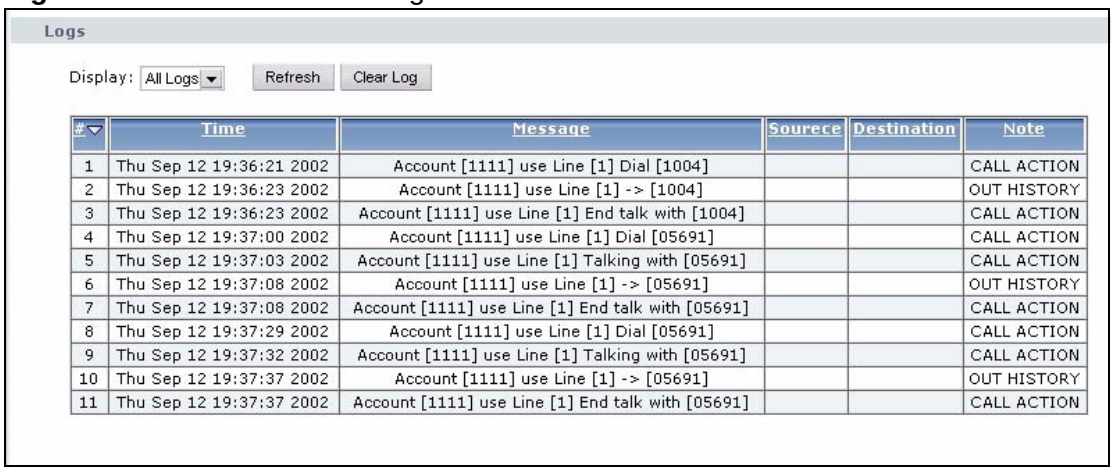
15.2 Logs Screen

Click **Maintenance > Logs** to open the **Logs** screen.

You can view logs and alert messages in this screen. Once the log table is full, old logs are deleted as new logs are created.

Click a column heading to sort the entries. A triangle indicates the direction of the sort order.

Figure 151 Maintenance > Logs


Logs
Display: All Logs
Refresh
Clear Log
Time Message Sourece Destination Note
1 Thu Sep 12 19:36:21 2002 Account [1111] use Line [1] Dial [1004] CALL ACTION
2 Thu Sep 12 19:36:23 2002 Account [1111] use Line [1] -> [1004] OUT HISTORY
3 Thu Sep 12 19:36:23 2002 Account [1111] use Line [1] End talk with [1004] CALL ACTION
4 Thu Sep 12 19:37:00 2002 Account [1111] use Line [1] Dial [05691] CALL ACTION
5 Thu Sep 12 19:37:03 2002 Account [1111] use Line [1] Talking with [05691] CALL ACTION
6 Thu Sep 12 19:37:08 2002 Account [1111] use Line [1] -> [05691] OUT HISTORY
7 Thu Sep 12 19:37:08 2002 Account [1111] use Line [1] End talk with [05691] CALL ACTION
8 Thu Sep 12 19:37:29 2002 Account [1111] use Line [1] Dial [05691] CALL ACTION
9 Thu Sep 12 19:37:32 2002 Account [1111] use Line [1] Talking with [05691] CALL ACTION
10 Thu Sep 12 19:37:37 2002 Account [1111] use Line [1] -> [05691] OUT HISTORY
11 Thu Sep 12 19:37:37 2002 Account [1111] use Line [1] End talk with [05691] CALL ACTION

The following table describes the labels in this screen.

Table 135 Maintenance > Logs

LABEL	DESCRIPTION
Logs	
Display	Select a category of logs to view.

Table 135 Maintenance > Logs (continued)

LABEL	DESCRIPTION
Refresh	Click **Refresh** to renew the log screen.
Clear Log	Click **Clear Log** to delete all the logs.
#	This is the log's index number.
Time	This field displays the time the log was recorded.
Message	This field states the reason for the log.
Source	This field lists the source IP address and the port number of the incoming packet that caused the log, if applicable.
Destination	This field lists the destination IP address and the port number of the outgoing packet that caused the log, if applicable.
Note	This field displays additional information about the log entry.

15.3 SIP Message

Click **Maintenance > Logs > SIP Message** to open this screen.

You can view SIP server messages and responses in this screen. Once the log is full, old messages are deleted as new ones are created.

Figure 152 Maintenance > SIP Message

The following table describes the labels in this screen.

Table 136 Maintenance > SIP Message

LABEL	DESCRIPTION
Refresh	Click this to refresh the V500 SIP messages.
Clear Message	Click this to clear all existing SIP messages in the V500.

16 Tools

16.1 Overview

This chapter shows you how to upload new firmware, upload or save backup configuration files, restart the V500 and manage ringtones.

16.1.1 What You Can Do in This Chapter

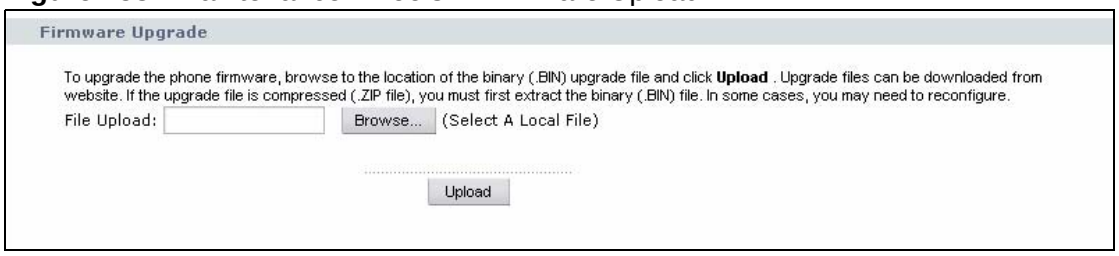
- The **Firmware Upload** screen allows you to upload new firmware to your V500 (Section 16.2 on page 252).
- The **Configuration** screen allows you to save your V500's configuration data, restore it from a saved file, and reset the device to its factory defaults (Section 16.3 on page 254).
- The **Restart** screen allows you to reboot the V500 without turning the power off (Section 16.4 on page 256).
- The **Ring Maintenance** screen allows you to upload files to the V500 and use them as ringtones (Section 16.5 on page 257).
- The **Packet Mirror** screen allows you to send data packets from the V500 to another IP address, where they can be analyzed to clarify Internet-related issues (Section 16.6 on page 258).

16.2 Firmware Upload Screen

Find firmware at www.zyxel.com in a file that (usually) uses the system model name with a "*.bin" extension, e.g., "V500.bin". The upload process uses HTTP (Hypertext Transfer Protocol) and may take up to two minutes. After a successful upload, the system will reboot. See the Firmware and Configuration File Maintenance chapter for upgrading firmware using FTP/TFTP commands.

Click **Maintenance > Tools**. Follow the instructions in this screen to upload firmware to your V500.

Figure 153 Maintenance > Tools > Firmware Upload


Firmware Upgrade
To upgrade the phone firmware, browse to the location of the binary (.BIN) upgrade file and click Upload . Upgrade files can be downloaded from website. If the upgrade file is compressed (.ZIP file), you must first extract the binary (.BIN) file. In some cases, you may need to reconfigure.
File Upload:
Browse...
(Select A Local File)
Upload

The following table describes the labels in this screen.

Table 137 Maintenance > Tools > Firmware Upload

LABEL	DESCRIPTION
Firmware Upgrade	
File Upload	Type in the location of the file you want to upload in this field or click **Browse...** to find it.
Browse...	Click **Browse...** to find the .bin file you want to upload. Remember that you must decompress compressed (.zip) files before you can upload them.
Upload	Click **Upload** to begin the upload process. This process may take up to two minutes.

Note: Do not turn off the V500 while firmware upload is in progress!

After you see the **Firmware Upload In Process** screen, wait two minutes before logging into the V500 again.

Figure 154 Upload Warning

ZyXEL
Firmware Upgrading...
The Phone Firmware is Upgrading Now. Please Wait...
Download upgrade file successful! Please don't turn off power. As there will be no indication of when the process is complete, please wait for five minute before attempting to access the device again.

The V500 automatically restarts during this interval, causing a temporary network disconnect. In some operating systems, you may see the following icon on your desktop.

Figure 155 Network Temporarily Disconnected

After two minutes, log in again and check your new firmware version in the **Status** screen.

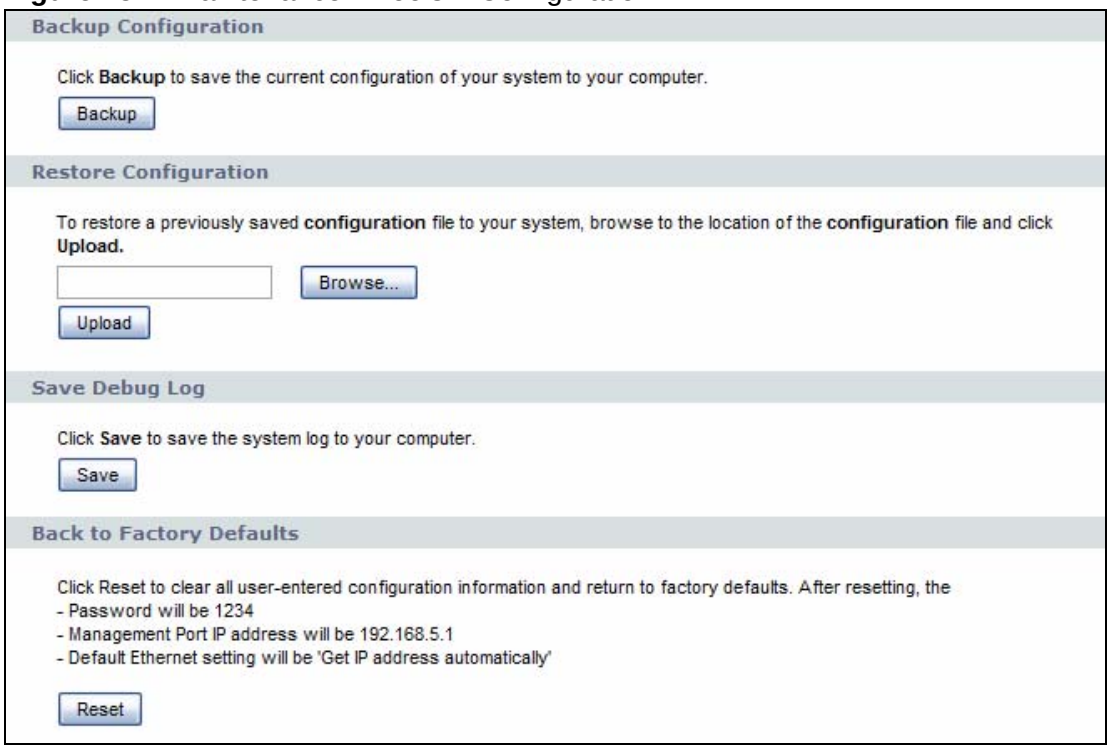
If the upload was not successful, the following screen will appear. Click **Return** to go back to the **Firmware** screen.

Figure 156 Upload Error Message

16.3 Configuration Screen

Click **Maintenance > Tools** > **Configuration**. Information related to factory defaults, backup configuration, saving the debug log, and restoring configuration is displayed on this screen.

Figure 157 Maintenance > Tools > Configuration


Backup Configuration
Click Backup to save the current configuration of your system to your computer.
Backup
Restore Configuration
To restore a previously saved configuration file to your system, browse to the location of the configuration file and click Upload.
Browse...
Upload
Save Debug Log
Click Save to save the system log to your computer.
Save
Back to Factory Defaults
Click Reset to clear all user-entered configuration information and return to factory defaults. After resetting, the
- Password will be 1234
- Management Port IP address will be 192.168.5.1
- Default Ethernet setting will be 'Get IP address automatically'
Reset

16.3.1 Backup Configuration

Backup configuration allows you to back up (save) the V500's current configuration to a file on your computer. Once your V500 is configured and functioning properly, it is highly recommended that you back up your configuration file before making configuration changes. The backup configuration file will be useful in case you need to return to your previous settings.

Click **Backup** to save the V500's current configuration to your computer.

16.3.2 Restore Configuration

Restore configuration allows you to upload a new or previously saved configuration file from your computer to your V500.

Table 138 Maintenance > Tools > Configuration > Restore

LABEL	DESCRIPTION
Restore Configuration	
File Path	Type in the location of the file you want to upload in this field or click **Browse...** to find it.
Browse...	Click **Browse...** to find the file you want to upload. Remember that you must decompress compressed (.ZIP) files before you can upload them.
Upload	Click **Upload** to begin the upload process.

Note: Do not turn off the V500 while configuration file upload is in progress

After you see a “configuration upload successful” screen, you must then wait one minute before logging into the V500 again.

Figure 158 Configuration Upload Successful

The V500 automatically restarts during this interval, causing a temporary network disconnect. In some operating systems, you may see the following icon on your desktop.

Figure 159 Temporarily Disconnected

If you uploaded a configuration file that sets the V500 to get an IP address automatically, use the **System Info** > **IP Address** > **IP Address** LCD menu to find out its new address. See Section 6.3.2 on page 81 for more information.

If the upload was not successful, the following screen will appear. Click **Return** to go back to the **Configuration** screen.

Figure 160 Configuration Restore Error

16.3.3 Back to Factory Defaults

Pressing the **Reset** button in this section clears all user-entered configuration information and returns the V500 to its factory defaults.

You can also press the **RESET** button on the rear panel to reset the factory defaults of your V500. Refer to the chapter about introducing the web configurator for more information on the **RESET** button.

16.3.4 Save Debug Log

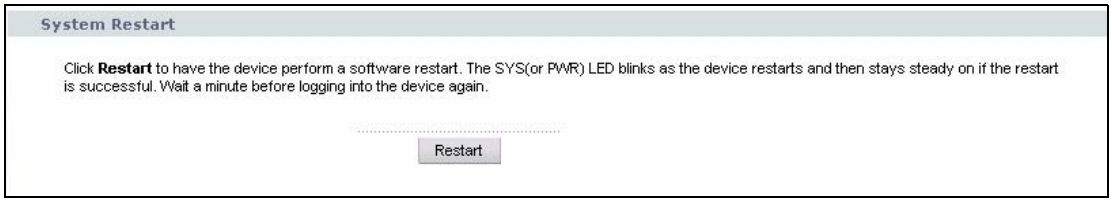
Click **Save** to store a copy of the V500's internal system log to a location on your computer. This is only useful when working with technical support to resolve an issue or for other types of debugging your system adminstrator may perform.

16.4 Restart Screen

System restart allows you to reboot the V500 without turning the power off.

Click **Maintenance > Tools** > **Restart**. Click **Restart** to have the V500 reboot. This does not affect the V500's configuration.

Figure 161 Maintenance > Tools > Restart


System Restart
Click Restart to have the device perform a software restart. The SYS(or PWR) LED blinks as the device restarts and then stays steady on if the restart is successful. Wait a minute before logging into the device again.
Restart

16.5 Ring Maintenance Screen

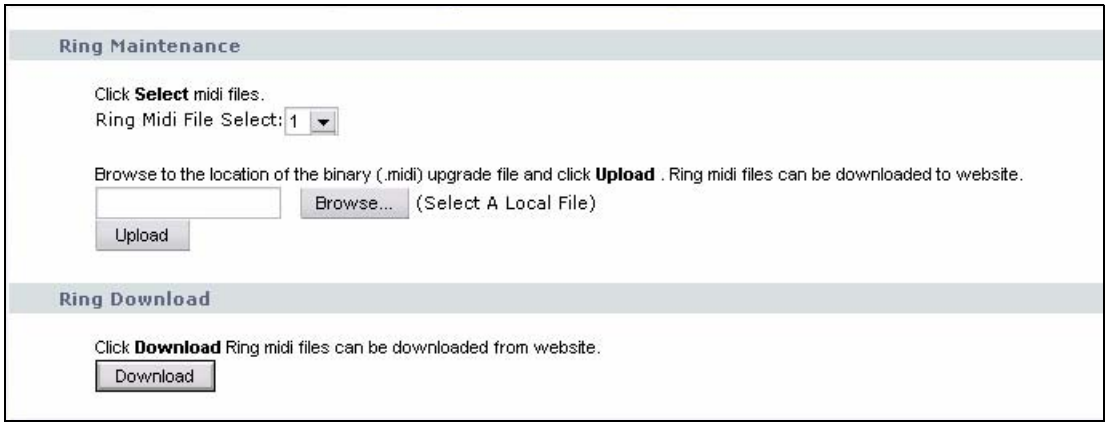
This screen allows you to upload files to the V500 and use them as ringtones. These files must be MIDI (Musical Instrument Digital Interface) files with a ".midi" extension. You can also download files from the V500 to your computer.

Note: The V500 has ten MIDI file slots. If you upload a MIDI file to a file slot on the V500, the MIDI file already in the slot is deleted. There is no way to retrieve the deleted file, unless it is a default ringtone (in which case you need to reset the V500).

Each MIDI file can be up to 10K in size.

Click **Maintenance** > **Tools** > **Ring Maintenance**. The following screen displays.

Figure 162 Maintenance > Tools > Ring Maintenance


Ring Maintenance
Click Select midi files.
Ring Midi File Select: 1
Browse to the location of the binary (.midi) upgrade file and click Upload . Ring midi files can be downloaded to website.
Browse...
(Select A Local File)
Upload
Ring Download
Click Download Ring midi files can be downloaded from website.
Download

The following table describes the labels in this screen.

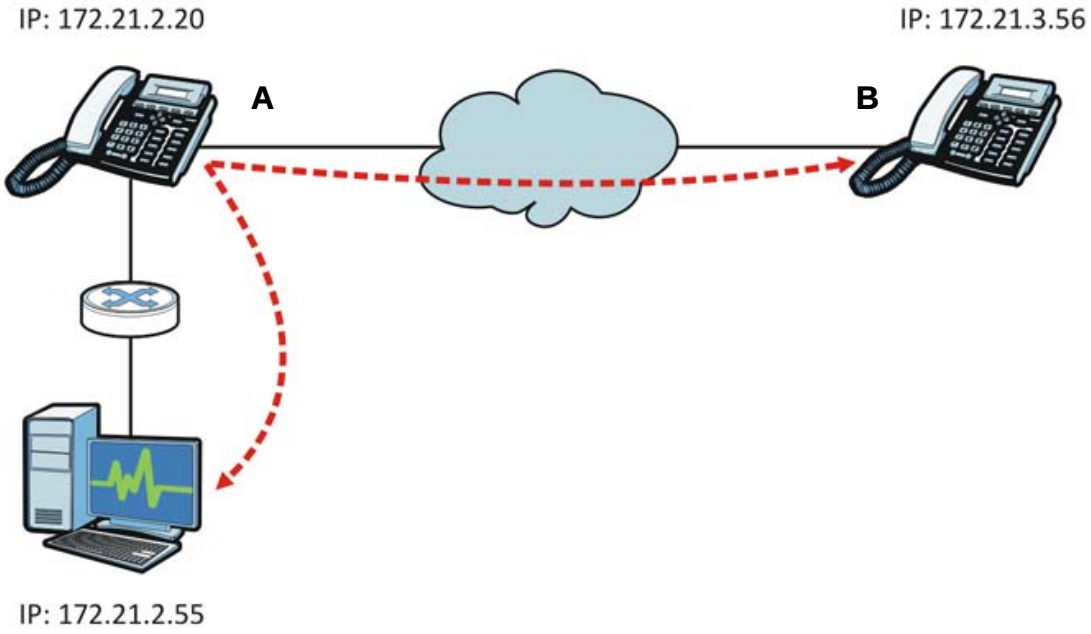
Table 139 Maintenance > Tools > Ring Maintenance

LABEL	DESCRIPTION
Ring Maintenance	
Ring Midi File Select	Select the file you want to manage. The V500 has ten MIDI file slots. Listen to the current file in each slot by using the **Menu Setting** > **Ring Setting** LCD screen.
Browse	Use this to select the file you want to upload to the V500.
Upload	Click this once you have selected a file you want to upload.
Ring Download	
Download	Click this to download the MIDI file you selected in the **Ring Midi File Select** list to your computer. The file is saved in .rar format.

16.6 Packet Mirror Screen

This screen is where you can configure packet mirroring on the V500. This sets the device to send voice packets from the V500 to another IP address, where they can be analyzed to clarify Internet-related issues.

Figure 163 Packet Mirror Example



In this example, phone **A** sends its voices packets to phone **B** as part of its routine communication but also sends duplicate packets to a computer with a packet analyzer so that they can be scanned for errors. Furthermore, in order for this to work both phone **A** and the monitoring computer are in the same subnet.

Click **Maintenance** > **Tools** > **Packet Mirror**. The following screen displays.

Figure 164 Maintenance > Tools > Packet Mirror

The following table describes the labels in this screen.

Table 140 Maintenance > Tools > Ring Maintenance

LABEL	DESCRIPTION
Active	Check this to enable packet mirroring.
Mirror IP	Enter an IP address to which mirrored packets are sent. Note: The mirror IP and the V500's IP must be in the same subnet. For more information subnetting, see Appendix D on page 313.
Apply	Click this to save your changes.
Reset	Click this to set every field in this screen to its last-saved value.

17

Troubleshooting

17.1 Overview

This chapter offers some suggestions to solve problems you might encounter. The potential problems are divided into the following categories.

- Power, Hardware Connections, and LEDs
- V500 Access and Login
- Internet Access
- Phone Calls and VoIP

17.2 Power, Hardware Connections, and LEDs

The V500 does not turn on. None of the LEDs turn on.

1. Make sure you are using the power adaptor or cord included with the V500.
2. Make sure the power adaptor or cord is connected to the V500 and plugged in to an appropriate power source. Make sure the power source is turned on.
3. Disconnect and re-connect the power adaptor or cord to the V500.
4. If the problem continues, contact the vendor.

One of the keys or LEDs does not behave as expected.

1. Make sure you understand the normal behavior of the key or LED. See Section 2.2 on page 35.

2 Check the hardware connections. See the Quick Start Guide and Section 2.2 on page 35.

3 Inspect your cables for damage. Contact the vendor to replace any damaged cables.

4 Disconnect and re-connect the power adaptor to the V500.

5 If the problem continues, contact the vendor.

The LCD screen is too faint / too bright / unclear.

Press the **Menu** key. Go to the **Advanced Setting** > **Display Adjusting** menu.

- If the screen is unclear, select **Font Gray Level** to adjust its contrast.
- If the screen is too faint or too bright, select **Display Brightness**.

17.3 V500 Access and Login

I forgot the IP address for the V500.

1 The V500 is set to get an IP address automatically by default. Check the IP address in the **System Info** > **IP Address** > **IP Address** LCD menu.

2 Set a static IP address for the V500 in the **Advanced Setting** > **Network Setting** > **Static IP** menus (see Section 7.3.2 on page 114).

3 Alternatively, use the management IP address (192.168.5.1 is the default) to log in to the V500 (see Section 10.3 on page 204).

I forgot the password.

1 The default password is **1234**.

2 If this does not work, you have to reset the device to its factory defaults. See Section 2.2.2 on page 40.

I cannot see or access the **Login** screen in the web configurator.

1. Make sure you are using the correct IP address.
   - The V500 is set to get an IP address automatically by default. Check the IP address it is using in the **System Info** > **IP Address** > **IP Address** LCD menu.
   - If you changed the IP address (Section on page 201), use the new IP address.
   - If you changed the IP address and have forgotten it, see the troubleshooting suggestions for I forgot the IP address for the V500.
2. Check the hardware connections, and make sure the LEDs are behaving as expected. See the Quick Start Guide and Section 2.2 on page 35.
3. Make sure your Internet browser does not block pop-up windows and has JavaScripts and Java enabled. See Appendix C on page 305.
4. Make sure your computer is in the same subnet as the V500. (If you know that there are routers between your computer and the V500, skip this step.)
   - If there is no DHCP server on your network, make sure your computer's IP address is in the same subnet as the V500. See Appendix B on page 275.
5. If the problem continues, contact the network administrator or vendor, or try one of the advanced suggestions.

   Advanced Suggestions

   - Try to access the V500 using another service, such as Telnet.

I can see the **Login** screen, but I cannot log in to the V500.

1. Make sure you have entered the user name and password correctly. The default password is **1234**. This field is case-sensitive, so make sure [Caps Lock] is not on.
2. You cannot log in to the web configurator while someone is using the Telnet to access the V500. Log out of the V500 in the other session, or ask the person who is logged in to log out.
3. Disconnect and re-connect the power adaptor or cord to the V500.
4. If this does not work, you have to reset the device to its factory defaults. See Section 2.2.2 on page 40.

I cannot Telnet to the V500.

See the troubleshooting suggestions for I cannot see or access the Login screen in the web configurator. Ignore the suggestions about your browser.

I cannot use FTP to upload / download the configuration file. / I cannot use FTP to upload new firmware.

See the troubleshooting suggestions for I cannot see or access the Login screen in the web configurator. Ignore the suggestions about your browser.

17.4 Internet Access

I cannot access the Internet through the V500.

1. Check the hardware connections, and make sure the LEDs and the LCD screen are behaving as expected. See the Quick Start Guide and Section 2.2 on page 35.
2. Disconnect all the cables from your device, and follow the directions in the Quick Start Guide again.
3. If the problem continues, contact your ISP.

I cannot access the Internet anymore. I had access to the Internet (with the V500), but my Internet connection is not available anymore.

1. Check the hardware connections, and make sure the LEDs and the LCD screen are behaving as expected. See the Quick Start Guide and Section 2.2 on page 35.
2. Restart the V500.
3. If the problem continues, contact your ISP.

The Internet connection is slow or intermittent.

1. There might be a lot of traffic on the network. Look at the LEDs, and check Section 2.2 on page 35. If the V500 is sending or receiving a lot of information, try closing some programs that use the Internet, especially peer-to-peer applications.
2. Check the signal strength. If the signal strength is low, try moving the V500 closer to the AP if possible, and look around to see if there are any devices that might be interfering with the wireless network (for example, microwaves, other wireless networks, and so on).
3. Reboot the V500.
4. If the problem continues, contact the network administrator or vendor, or try one of the advanced suggestions.

17.5 Phone Calls and VoIP

I cannot make VoIP calls.

Ensure that your V500 is set up as shown in your Quick Start Guide and Section 2.2 on page 35.

Look at the LCD screen. The tabs at the right hand side show details of the V500's SIP accounts. If a SIP account is registered, its name appears here. If a SIP account is not registered, **No Reg** displays.

If no SIP account is registered, do the following.

1. The V500's SIP settings may be misconfigured. Check your SIP settings and re-enter them if necessary (see Section 7.4 on page 122 for details).
2. If **No Reg** still displays, check your network settings (see Section 6.3 on page 80). If they are not correct, change them using information supplied by your ISP or network administrator (see Section 7.3 on page 108). If this does not help, contact your ISP or network administrator.

   If a SIP account is registered, choose it (press the key next to its tab). Try to make the call. If you still cannot call out, do the following.

1 Check your DNS (Domain Name Service) settings (see Section 6.3.2 on page 81).

- If you use a static IP address, see Section 7.3.2 on page 114 for how to change DNS settings.
- If you use a dynamic IP address (DHCP) your DNS settings are controlled by the DHCP server. The DHCP server may belong to your service provider, or it may be on your network. If your V500 does not get DNS server information automatically, check the settings on any hardware to which the V500 is connected, or contact your ISP or network administrator.
- If you use PPPoE, your DNS settings are controlled by your Internet Service Provider. If your V500 does not get DNS server information automatically, contact your ISP.

2 Check your DNS SRV settings for the SIP account you want to use (see Section 7.4.13 on page 144). If DNS SRV is turned off, turn it on.

3 Make sure that your V500 uses the voice codecs recommended by your VoIP service provider (see Section 7.4.11 on page 142).

I can make some VoIP calls, but not others.

The V500's DNS (Domain Name Service) settings may be misconfigured. See the suggestions about DNS in the troubleshooting section for "I cannot make VoIP calls.".

If this does not help, the phone of the person you are calling may be malfunctioning or misconfigured.

I can make phonecalls, but I cannot receive them.
or
I can receive some phonecalls, but not others.

Check your V500's call forwarding settings (see Section 6.6.1 on page 88). If they are misconfigured, certain calls may be mistakenly forwarded.

All my VoIP calls are of poor audio quality.

- If your ISP or network administrator gave you SIP TOS or RTP TOS values to use, enter them in the web configurator's **VoIP** > **SIP** > **QoS** screen (see Section 11.3 on page 213).

- If your V500 is connected to a router with configurable bandwidth management settings, check these settings. Consult the router's documentation for more information.
- Make sure that your V500 uses the voice codecs recommended by your VoIP service provider (see Section 7.4.11 on page 142).

I cannot use some calling features.

Many of the features your V500 supports depend on your VoIP service provider. You may have to subscribe to certain services. Contact your VoIP service provider for more information.

The incoming or outgoing audio is too quiet or too loud.
or
I cannot hear the V500's ring when a call is incoming.

Use the **VOLUME** keys to increase or decrease the volume.

- When no audio device (the handset, speakerphone or an external headset) is active, the **VOLUME** keys control the ringing volume.
- When an audio device is active, the **VOLUME** keys control the input and output of that device.

A

Product Specifications

The following tables summarize the V500's hardware and firmware features.

Table 141 Hardware Specifications

Dimensions (W x D x H)	232.5mm x 218.2mm x 94.8mm
Weight	932g
Power Specification	12V DC, 1.5A
Power over Ethernet (PoE) - V501 Only	IEEE 802.3af compliant.
Ethernet Ports	Auto-negotiating: 10 Mbps or 100 Mbps in either half-duplex or full-duplex mode. Use crossover Ethernet cables.
Handset Port	RJ-11 telephone connector.
(Headset) Microphone Port	3.5mm
(Headset) Headphone Port	3.5mm
Operation Temperature	0 ~ 40 C
Storage Temperature	-30 ~ 60 C
Operation Humidity	20 ~ 95% RH
Storage Humidity	20 ~ 95% RH
Distance between the centers of the holes (for wall mounting) on the device's back.	165mm
Recommended type of screws for wall-mounting	M4 Tap Screw, see Figure 166 on page 274.

Table 141 Hardware Specifications

Speakerphone	Internal speaker and microphone.
Phone Functions	Call forwarding Call transferring Conference calling Last number redial Voicemail Call muting Do Not Disturb Phonebook

Table 142 Firmware Specifications

FEATURE	DESCRIPTION
Default DHCP status	Client
Default management IP address	192.168.5.1
Default Password	1234
Device Management	Use the V500's LCD screen menus or the web configurator to easily configure the rich range of features.
Firmware Upgrade	Download new firmware (when available) from the ZyXEL web site and use the web configurator, an FTP or a TFTP tool to put it on the V500. Note: Only upload firmware for your specific model!
Configuration Backup & Restoration	Make a copy of the V500's configuration. You can put it back on the V500 later if you decide to revert back to an earlier configuration.
Network Address Translation (NAT)	Each computer on your network must have its own unique IP address. Use NAT to convert your public IP address(es) to multiple private IP addresses for the computers on your network.
Time and Date	Get the current time and date from an external server when you turn on your V500. You can also set the time manually. These dates and times are then used in logs.
Logging and Tracing	Use packet tracing and logs for troubleshooting. You can send logs from the V500 to an external syslog server.
PPPoE	PPPoE mimics a dial-up Internet access connection.
Remote Management	This allows you to decide whether a service (HTTP or FTP traffic for example) from a computer on a network (LAN or WAN for example) can access the V500.
Embedded FTP and TFTP Servers	The embedded FTP and TFTP servers enable fast firmware upgrades as well as configuration file backups and restoration.

Table 142 Firmware Specifications

FEATURE	DESCRIPTION
Auto-provisioning support	When auto-provisioning is used, the V500 downloads its settings automatically from the auto-provisioning server, meaning you do not have to input them manually.
Dynamic Jitter Buffer	The built-in adaptive buffer helps to smooth out the variations in delay (jitter) for voice traffic. This helps ensure good voice quality for your conversations.
Voice Activity Detection/ Silence Suppression	Voice Activity Detection (VAD) reduces the bandwidth that a call uses by not transmitting when you are not speaking.
Comfort Noise Generation	Your device generates background noise to fill moments of silence when the other device in a call stops transmitting because the other party is not speaking (as total silence could easily be mistaken for a lost connection).
Echo Cancellation	You device supports G.167, an ITU-T standard for eliminating the echo caused by the sound of your voice reverberating in the telephone receiver while you talk.
QoS (Quality of Service)	Quality of Service (QoS) mechanisms help to provide better service on a per-flow basis. Your device supports Type of Service (ToS) tagging. This allows the device to tag voice frames so they can be prioritized over the network.
Voice Codecs	G.711a/u, G.722, G.723.1, G.726 (16/24/32/40), G.729a/b
DTMF	In-band and out-of band PCM, RFC2833, SIP Info
Ring File Management	Upload and download MIDI (.mid) ringtone files to and from the V500.

The following list, which is not exhaustive, illustrates the standards supported in the V500.

Table 143 Standards Supported

STANDARD	DESCRIPTION
RFC 1058	RIP-1 (Routing Information Protocol)
RFC 1112	IGMP v1
RFC 1305	Network Time Protocol (NTP version 3)
RFC 1321	The MD5 Message-Digest Algorithm
RFC 1483	Multiprotocol Encapsulation over ATM Adaptation Layer 5
RFC 1631	IP Network Address Translator (NAT)
RFC 1661	The Point-to-Point Protocol (PPP)
RFC 1723	RIP-2 (Routing Information Protocol)
RFC 1890	RTP Profile for Audio and Video Conferences with Minimal Control
RFC 2236	Internet Group Management Protocol, Version 2.
RFC 2327	SDP: Session Description Protocol.
RFC 2408	Internet Security Association and Key Management Protocol (ISAKMP)

Table 143 Standards Supported (continued)

STANDARD	DESCRIPTION
RFC 2516	A Method for Transmitting PPP Over Ethernet (PPPoE)
RFC 2617	HTTP Authentication: Basic and Digest Access Authentication
RFC 2766	Network Address Translation - Protocol
RFC 2782	A DNS RR for specifying the location of services (DNS SRV)
RFC 2833	RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals
RFC 2976	The SIP INFO Method
RFC 3261	SIP: Session Initiation Protocol. (Updated by RFC3265, RFC3853)
RFC 3262	Reliability of Provisional Responses in Session Initiation
RFC 3263	Session Initiation Protocol (SIP): Locating SIP Servers.
RFC 3264	An Offer/Answer Model with Session Description Protocol (SDP)
RFC 3389	Real-time Transport Protocol (RTP) Payload for Comfort Noise (CN)
RFC 3515	The Session Initiation Protocol (SIP) Refer Method.
RFC 3550	RTP: A Transport Protocol for Real-Time Applications.
RFC 3581	An Extension to the Session Initiation Protocol (SIP) for Symmetric Response Routing.
RFC 3608	Session Initiation Protocol (SIP) Extension Header Field for Service Route Discovery During Registration
RFC 3665	Session Initiation Protocol (SIP) Basic Call Flow Examples
RFC 3711	The Secure Real-time Transport Protocol (SRTP)
RFC 3842	A Message Summary and Message Waiting Indication Event Package for the Session Initiation Protocol (SIP)
RFC 3891	The Session Initiation Protocol (SIP) "Replaces" Header
RFC 3892	The Session Initiation Protocol (SIP) Referred-By Mechanism. R.
RFC 4028	Session Timers in the Session Initiation Protocol (SIP)
ITU Q.23	Dual-Tone Multi-Frequency signaling (DTMF)

Power over Ethernet (PoE) Specifications (V501-T1 Only)

You can use a power over Ethernet injector to power the V501-T1. The injector must comply to IEEE 802.3af.

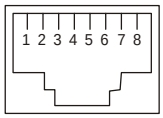
Table 144 Power over Ethernet Injector Specifications

Power Output	15.4 Watts maximum
Power Current	400 mA maximum

Table 145 Power over Ethernet Injector RJ-45 Port Pin Assignments

	PIN NO	RJ-45 SIGNAL ASSIGNMENT

Table 145 Power over Ethernet Injector RJ-45 Port Pin Assignments



1	Output Transmit Data +
2	Output Transmit Data -
3	Receive Data +
4	Power +
5	Power +
6	Receive Data -
7	Power -
8	Power -

Wall-mounting Instructions

Complete the following steps to hang your V500 on a wall.

Note: See Table 141 on page 269 for the size of screws to use and how far apart to place them.

1 Select a position free of obstructions on a sturdy wall.

2 Drill two holes for the screws.

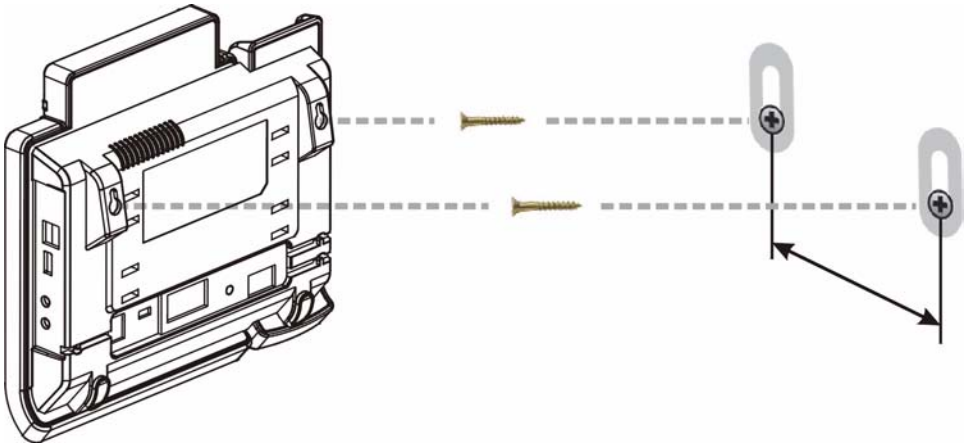
Be careful to avoid damaging pipes or cables located inside the wall when drilling holes for the screws.

3 Do not insert the screws all the way into the wall. Leave a small gap of about 0.5 cm between the heads of the screws and the wall.

4 Make sure the screws are snugly fastened to the wall. They need to hold the weight of the V500 with the connection cables.

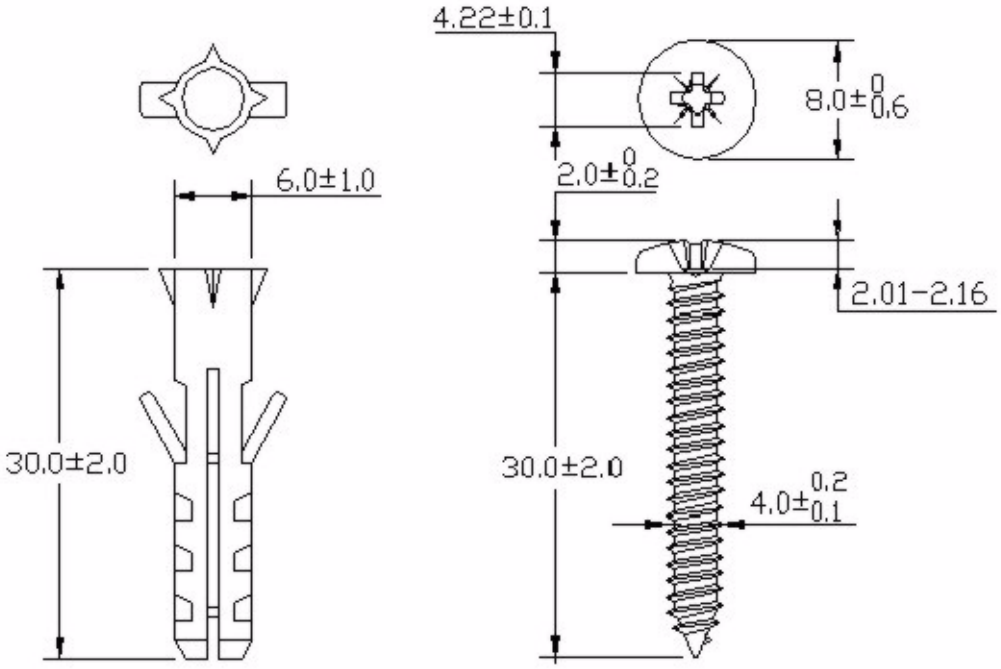
5 Align the holes on the back of the V500 with the screws on the wall. Hang the V500 on the screws.

Figure 165 Wall-mounting Example



The following are dimensions of an M4 tap screw and masonry plug used for wall mounting. All measurements are in millimeters (mm).

Figure 166 Masonry Plug and M4 Tap Screw



B

Setting Up Your Computer's IP Address

Note: Your specific ZyXEL device may not support all of the operating systems described in this appendix. See the product specifications for more information about which operating systems are supported.

This appendix shows you how to configure the IP settings on your computer in order for it to be able to communicate with the other devices on your network. Windows Vista/XP/2000, Mac OS 9/OS X, and all versions of UNIX/LINUX include the software components you need to use TCP/IP on your computer.

If you manually assign IP information instead of using a dynamic IP, make sure that your network's computers have IP addresses that place them in the same subnet.

In this appendix, you can set up an IP address for:

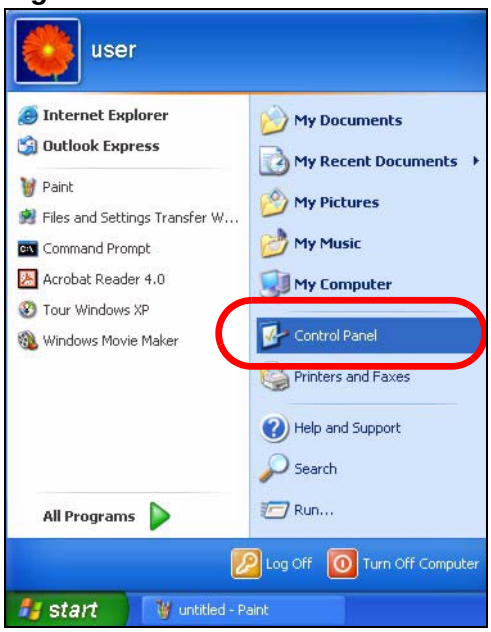
- Windows XP/NT/2000 on page 276
- Windows Vista on page 280
- Mac OS X: 10.3 and 10.4 on page 285
- Mac OS X: 10.5 on page 289
- Linux: Ubuntu 8 (GNOME) on page 292
- Linux: openSUSE 10.3 (KDE) on page 298

Windows XP/NT/2000

The following example uses the default Windows XP display theme but can also apply to Windows 2000 and Windows NT.

1 Click **Start** > **Control Panel**.

Figure 167 Windows XP: Start Menu

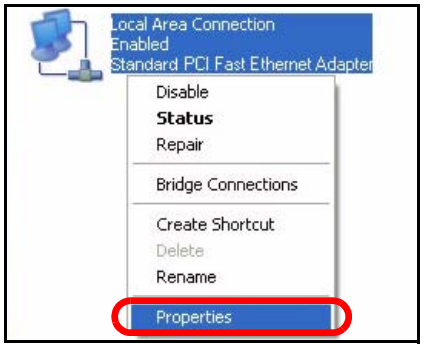


2 In the **Control Panel**, click the **Network Connections** icon.

Figure 168 Windows XP: Control Panel

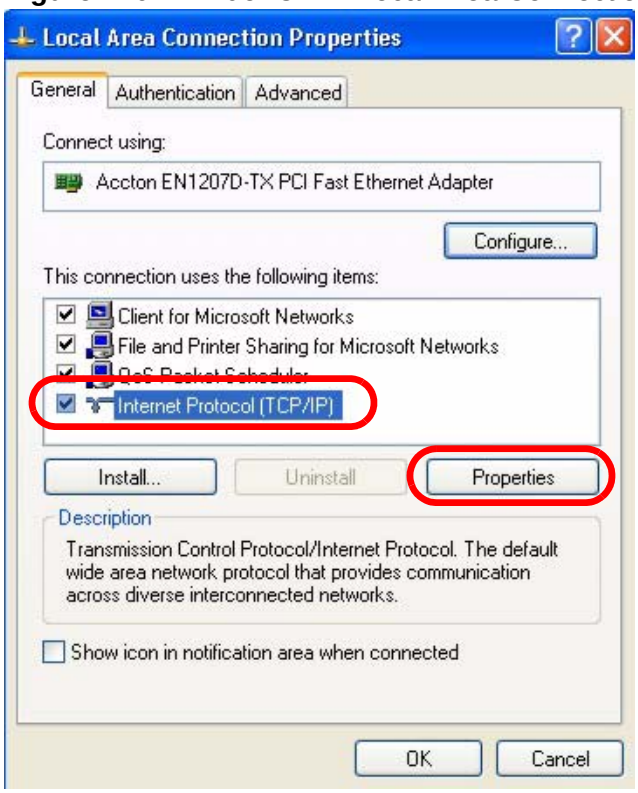
3 Right-click **Local Area Connection** and then select **Properties**.

Figure 169 Windows XP: Control Panel > Network Connections > Properties



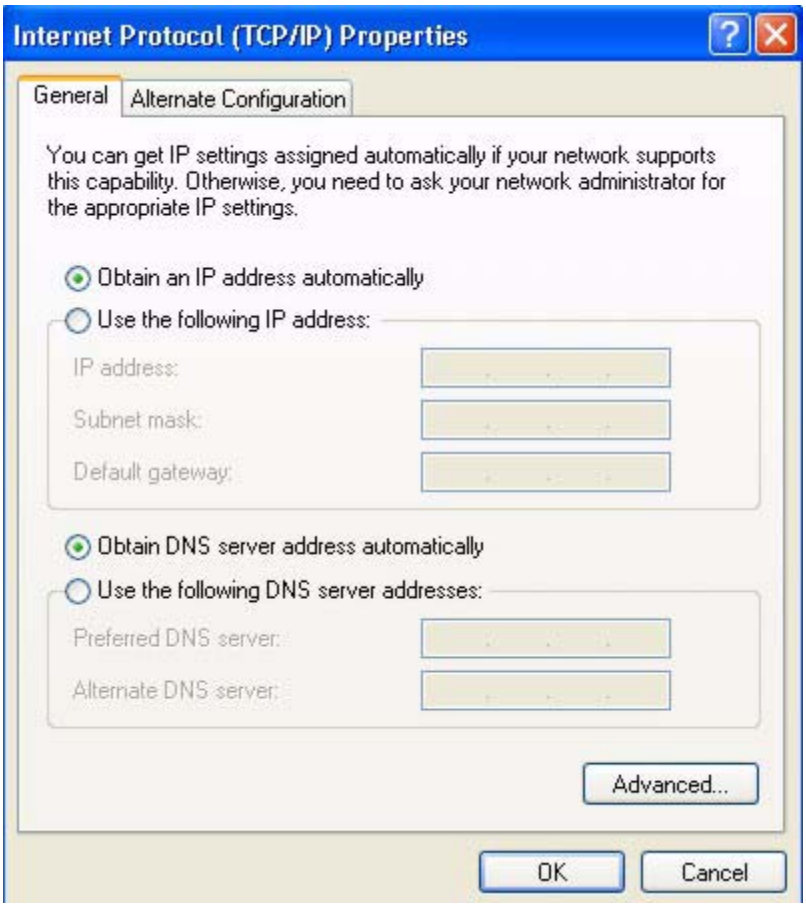
4 On the **General** tab, select **Internet Protocol (TCP/IP)** and then click **Properties**.

Figure 170 Windows XP: Local Area Connection Properties



5 The **Internet Protocol TCP/IP Properties** window opens.

Figure 171 Windows XP: Internet Protocol (TCP/IP) Properties


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

6 Select **Obtain an IP address automatically** if your network administrator or ISP assigns your IP address dynamically.

Select **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields if you have a static IP address that was assigned to you by your network administrator or ISP. You may also have to enter a **Preferred DNS server** and an **Alternate DNS server,** if that information was provided.

7 Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

8 Click **OK** to close the **Local Area Connection Properties** window.

Verifying Settings

1. Click **Start** > **All Programs** > **Accessories** > **Command Prompt**.
2. In the **Command Prompt** window, type "ipconfig" and then press [ENTER].

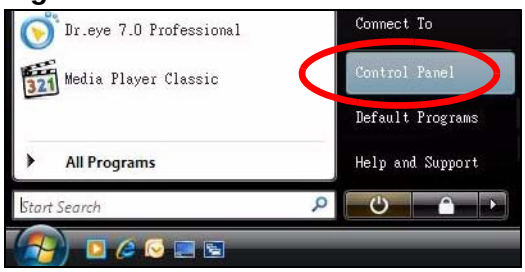
   You can also go to **Start > Control Panel > Network Connections**, right-click a network connection, click **Status** and then click the **Support** tab to view your IP address and connection information.

Windows Vista

This section shows screens from Windows Vista Professional.

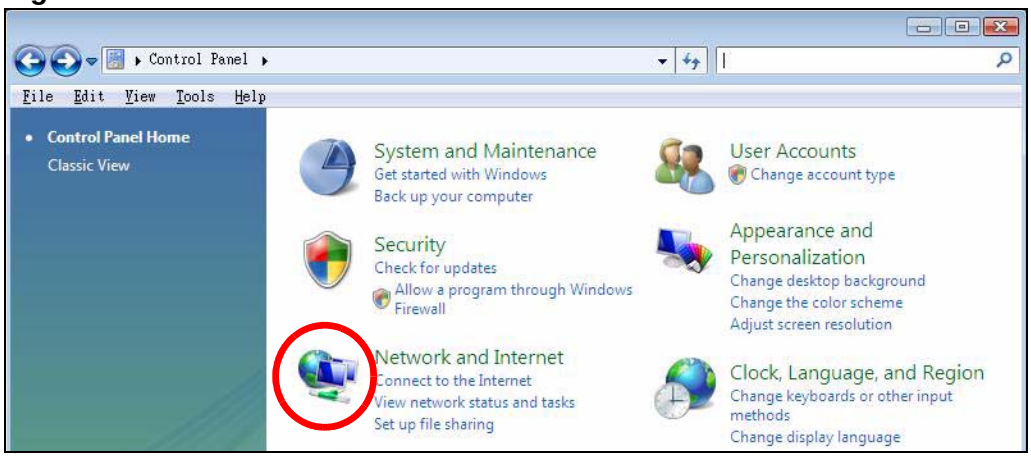
1 Click **Start** > **Control Panel**.

Figure 172 Windows Vista: Start Menu



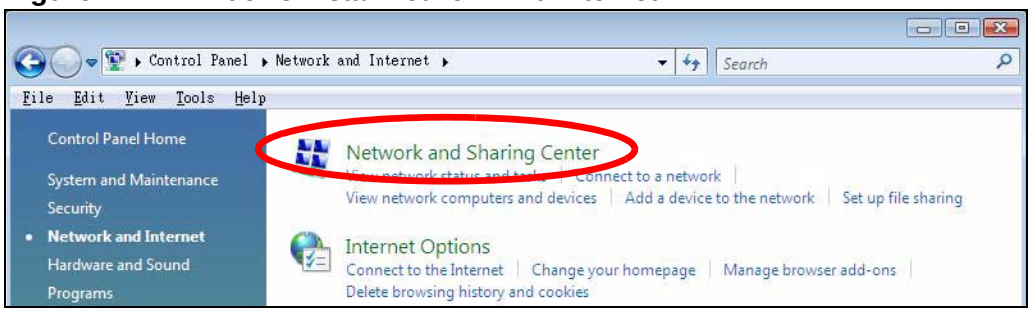
2 In the **Control Panel**, click the **Network and Internet** icon.

Figure 173 Windows Vista: Control Panel



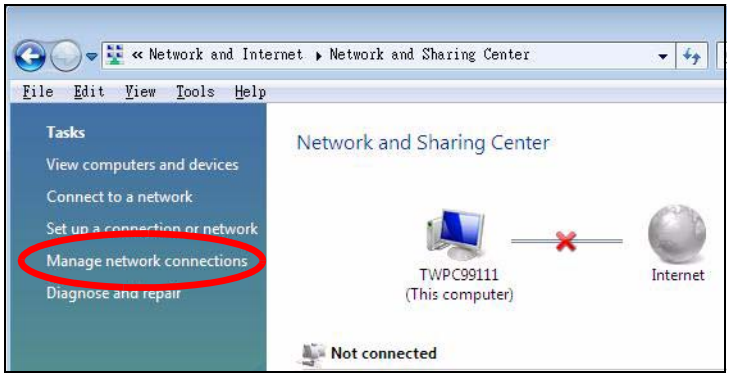
3 Click the **Network and Sharing Center** icon.

Figure 174 Windows Vista: Network And Internet



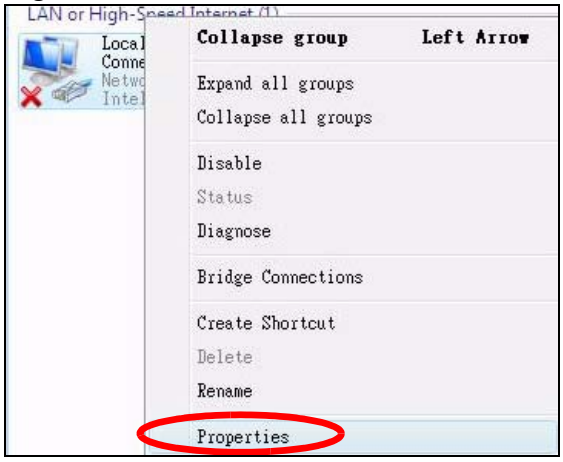
4 Click **Manage network connections**.

Figure 175 Windows Vista: Network and Sharing Center



5 Right-click **Local Area Connection** and then select **Properties**.

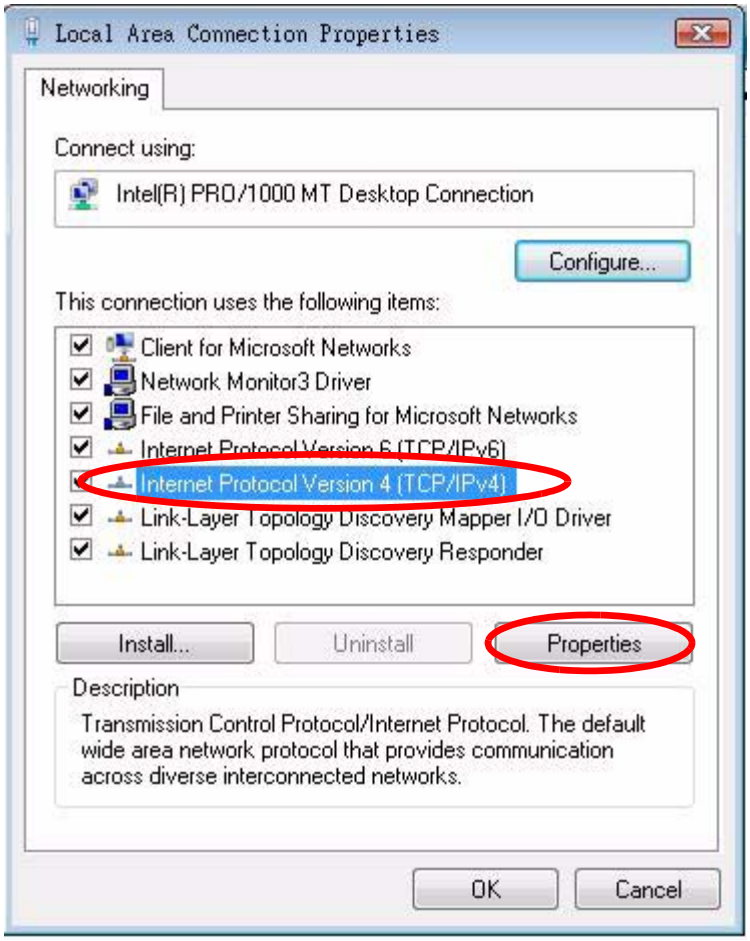
Figure 176 Windows Vista: Network and Sharing Center



Note: During this procedure, click **Continue** whenever Windows displays a screen saying that it needs your permission to continue.

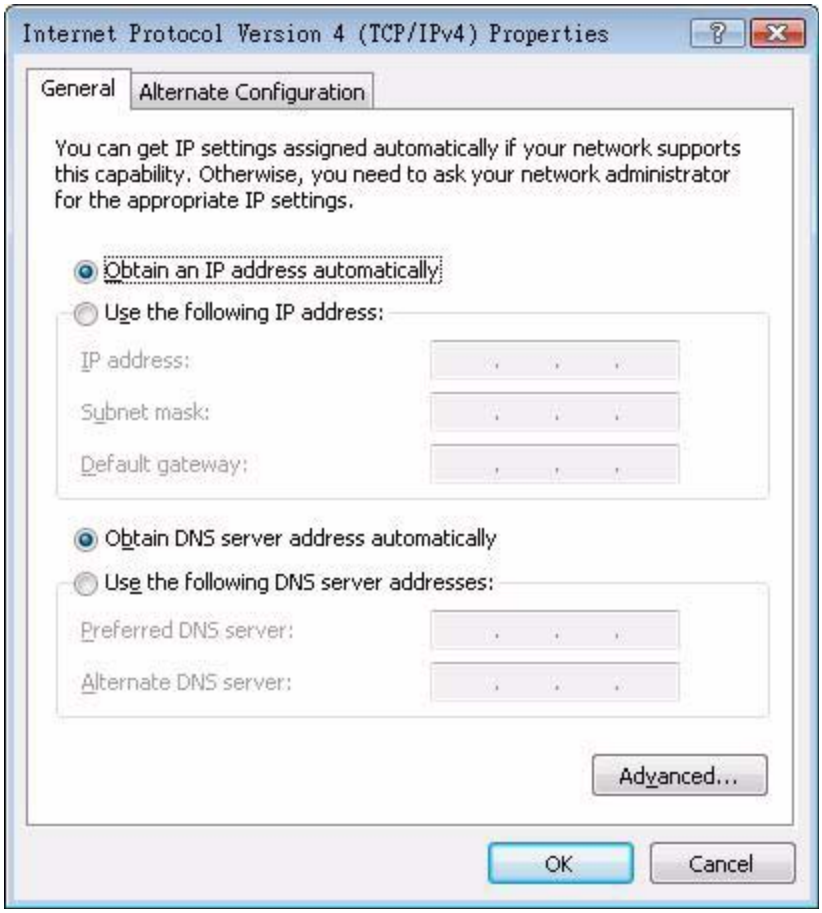
6 Select **Internet Protocol Version 4 (TCP/IPv4)** and then select **Properties**.

Figure 177 Windows Vista: Local Area Connection Properties



7 The **Internet Protocol Version 4 (TCP/IPv4) Properties** window opens.

Figure 178 Windows Vista: Internet Protocol Version 4 (TCP/IPv4) Properties


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

8 Select **Obtain an IP address automatically** if your network administrator or ISP assigns your IP address dynamically.

Select **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields if you have a static IP address that was assigned to you by your network administrator or ISP. You may also have to enter a **Preferred DNS server** and an **Alternate DNS server,** if that information was provided.Click **Advanced**.

9 Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

10 Click **OK** to close the **Local Area Connection Properties** window.

Verifying Settings

1 Click **Start** > **All Programs** > **Accessories** > **Command Prompt**.

2 In the **Command Prompt** window, type "ipconfig" and then press [ENTER].

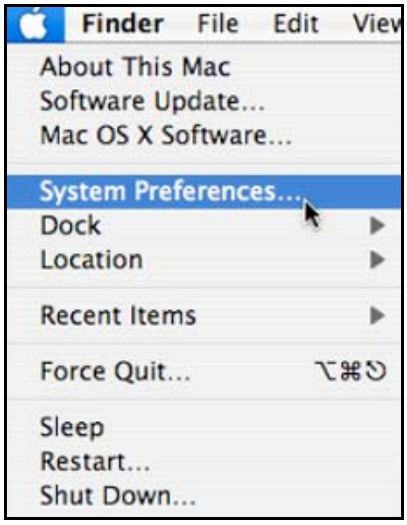
You can also go to **Start > Control Panel > Network Connections**, right-click a network connection, click **Status** and then click the **Support** tab to view your IP address and connection information.

Mac OS X: 10.3 and 10.4

The screens in this section are from Mac OS X 10.4 but can also apply to 10.3.

1 Click **Apple** > **System Preferences**.

Figure 179 Mac OS X 10.4: Apple Menu

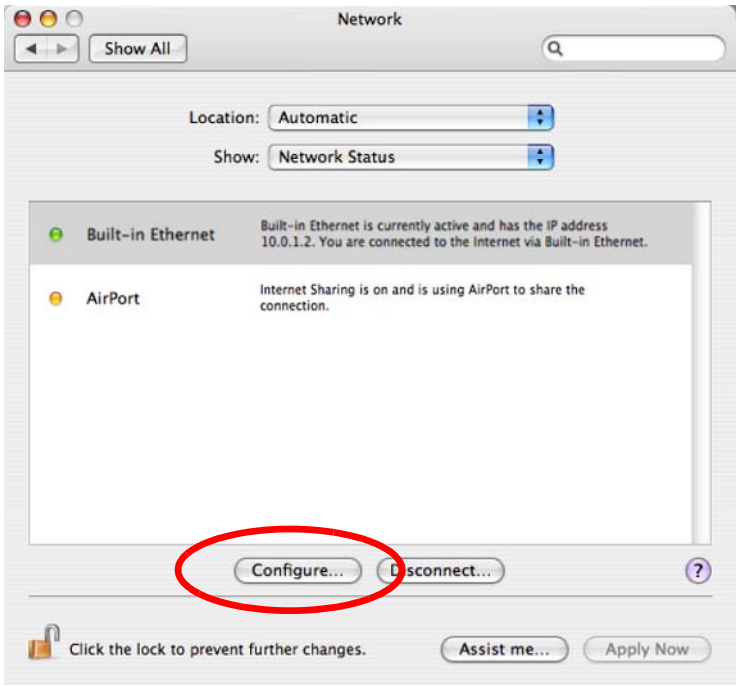


2 In the **System Preferences** window, click the **Network** icon.

Figure 180 Mac OS X 10.4: System Preferences

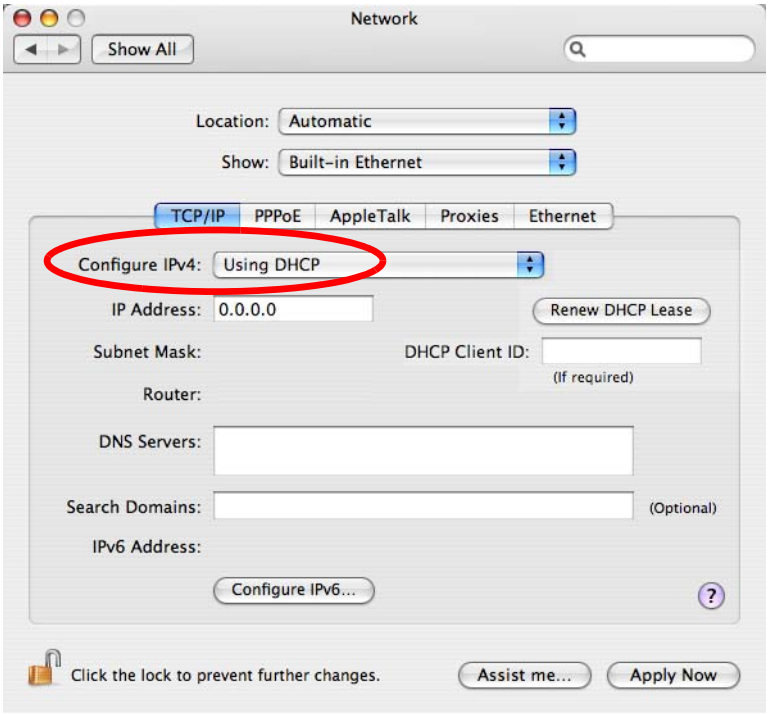
3 When the **Network** preferences pane opens, select **Built-in Ethernet** from the network connection type list, and then click **Configure.**

Figure 181 Mac OS X 10.4: Network Preferences


Network
Show All
Location: Automatic
Show: Network Status
Built-in Ethernet
Built-in Ethernet is currently active and has the IP address 10.0.1.2. You are connected to the Internet via Built-in Ethernet.
AirPort
Internet Sharing is on and is using AirPort to share the connection.
Configure...
Disconnect...
Click the lock to prevent further changes.
Assist me...
Apply Now

4 For dynamically assigned settings, select **Using DHCP** from the **Configure IPv4** list in the **TCP/IP** tab.

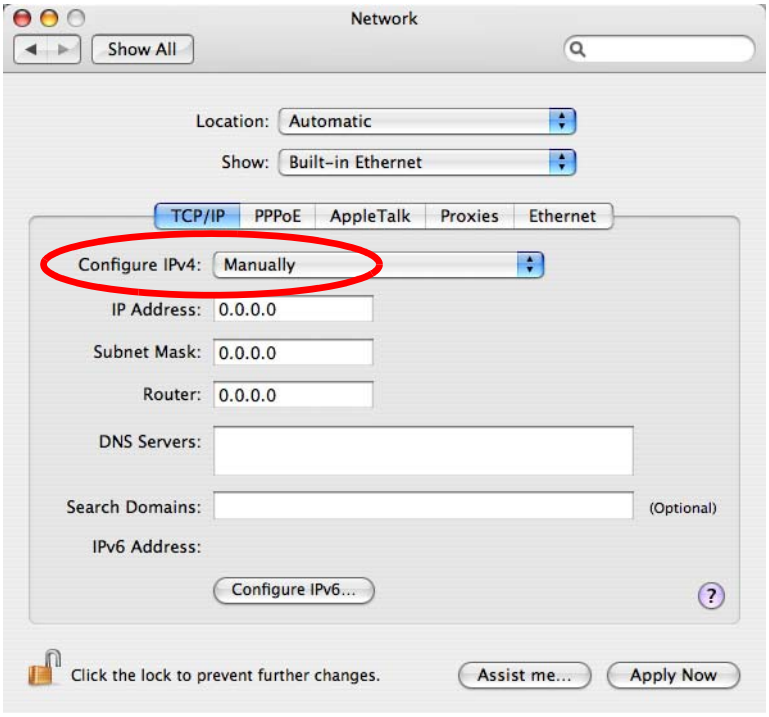
Figure 182 Mac OS X 10.4: Network Preferences > TCP/IP Tab.



5 For statically assigned settings, do the following:

- From the **Configure IPv4** list, select **Manually**.
- In the **IP Address** field, type your IP address.
- In the **Subnet Mask** field, type your subnet mask.
- In the **Router** field, type the IP address of your device.

Figure 183 Mac OS X 10.4: Network Preferences > Ethernet

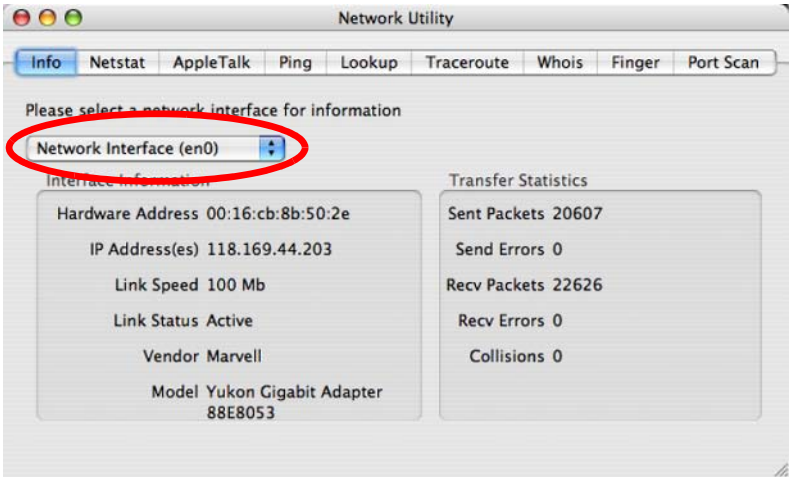


6 Click Apply Now and close the window.

Verifying Settings

Check your TCP/IP properties by clicking **Applications > Utilities > Network Utilities**, and then selecting the appropriate **Network Interface** from the **Info** tab.

Figure 184 Mac OS X 10.4: Network Utility

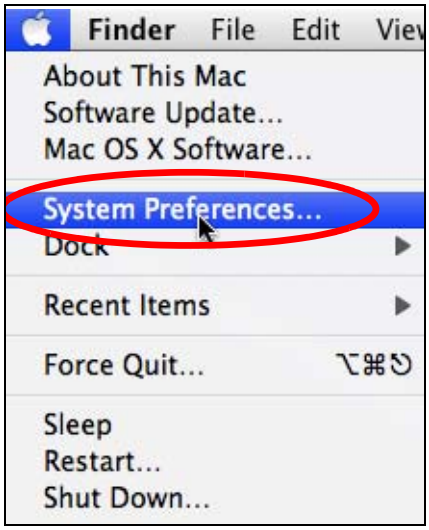


Mac OS X: 10.5

The screens in this section are from Mac OS X 10.5.

1 Click **Apple** > **System Preferences**.

Figure 185 Mac OS X 10.5: Apple Menu

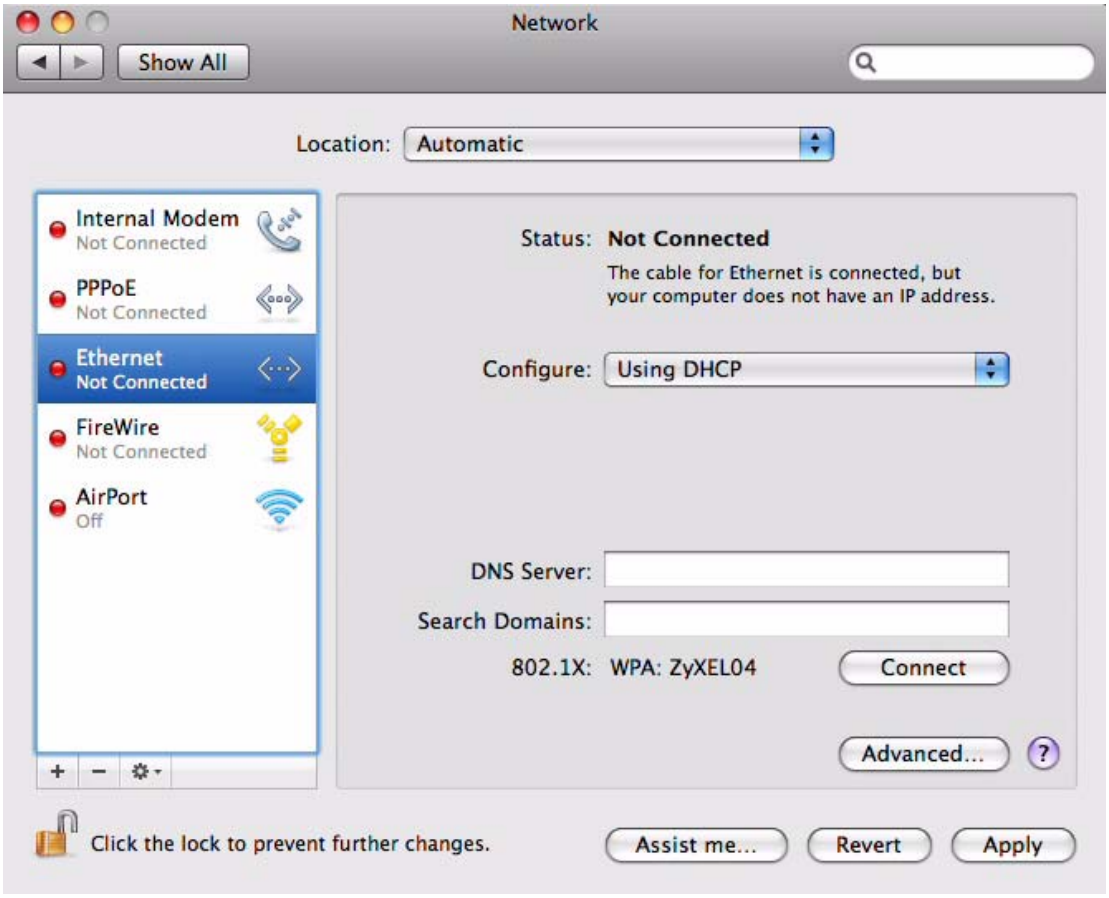


2 In **System Preferences**, click the **Network** icon.

Figure 186 Mac OS X 10.5: Systems Preferences

3 When the **Network** preferences pane opens, select **Ethernet** from the list of available connection types.

Figure 187 Mac OS X 10.5: Network Preferences > Ethernet



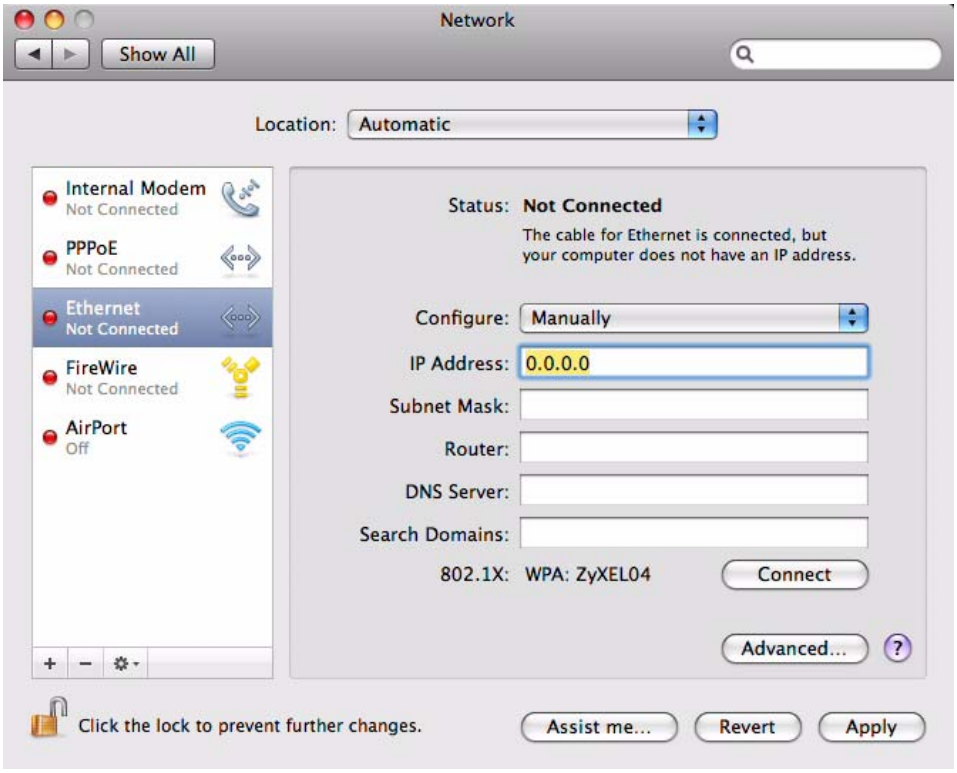
4 From the **Configure** list, select **Using DHCP** for dynamically assigned settings.

5 For statically assigned settings, do the following:

- From the **Configure** list, select **Manually**.
- In the **IP Address** field, enter your IP address.
- In the **Subnet Mask** field, enter your subnet mask.

- In the **Router** field, enter the IP address of your WiMAX Modem.

Figure 188 Mac OS X 10.5: Network Preferences > Ethernet

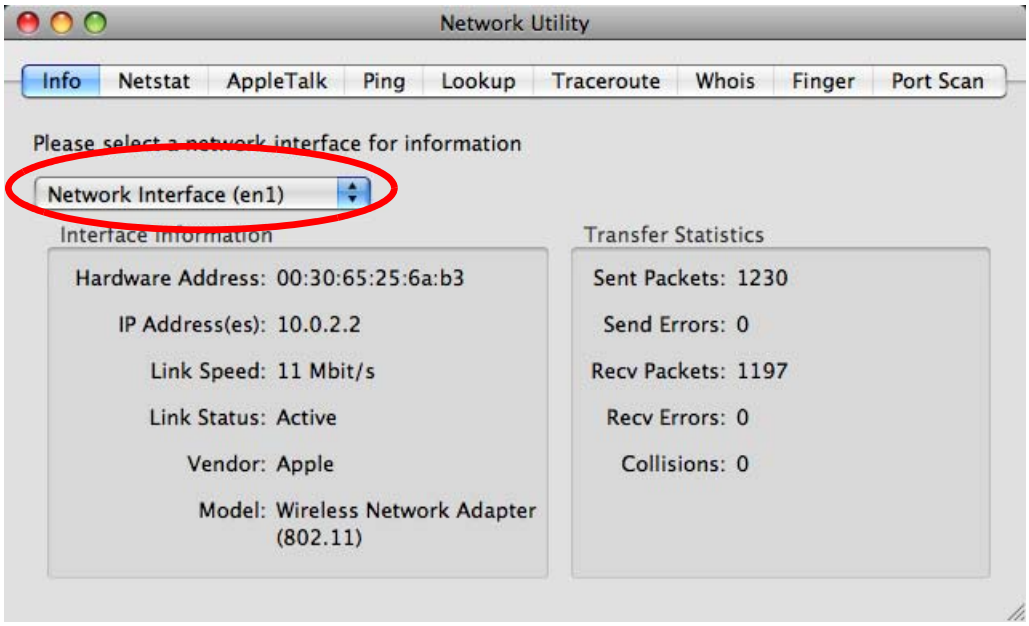


6 Click **Apply** and close the window.

Verifying Settings

Check your TCP/IP properties by clicking **Applications > Utilities > Network Utilities**, and then selecting the appropriate **Network interface** from the **Info** tab.

Figure 189 Mac OS X 10.5: Network Utility



Linux: Ubuntu 8 (GNOME)

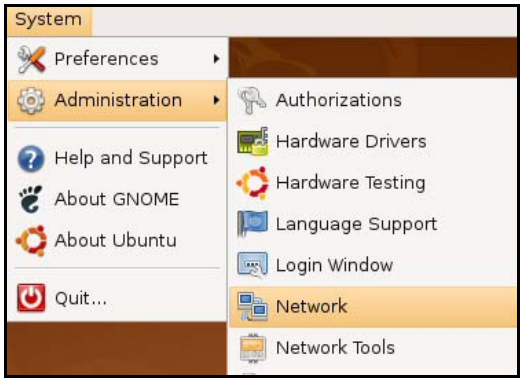
This section shows you how to configure your computer's TCP/IP settings in the GNU Object Model Environment (GNOME) using the Ubuntu 8 Linux distribution. The procedure, screens and file locations may vary depending on your specific distribution, release version, and individual configuration. The following screens use the default Ubuntu 8 installation.

Note: Make sure you are logged in as the root administrator.

Follow the steps below to configure your computer IP address in GNOME:

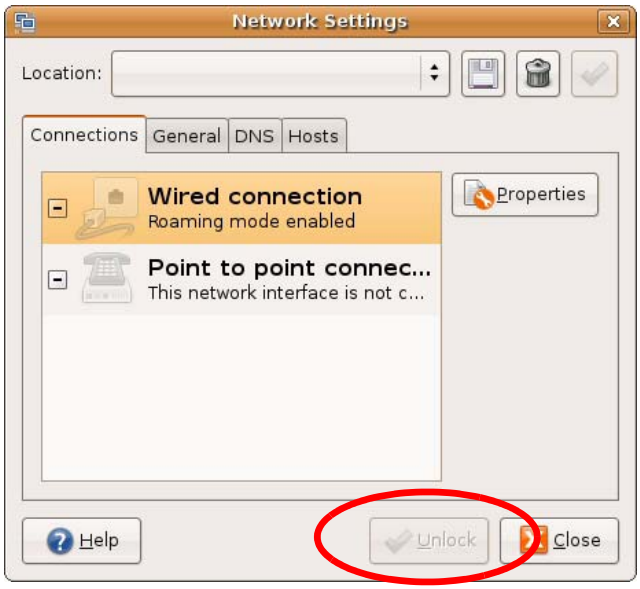
1 Click **System > Administration > Network**.

Figure 190 Ubuntu 8: System > Administration Menu



2 When the **Network Settings** window opens, click **Unlock** to open the **Authenticate** window. (By default, the **Unlock** button is greyed out until clicked.) You cannot make changes to your configuration unless you first enter your admin password.

Figure 191 Ubuntu 8: Network Settings > Connections



3 In the **Authenticate** window, enter your admin account name and password then click the **Authenticate** button.

Figure 192 Ubuntu 8: Administrator Account Authentication

Authenticate
System policy prevents modifying the configuration
An application is attempting to perform an action that requires privileges. Authentication as one of the users below is required to perform this action.
C.J.,,,, (chris)
Password for chris:
Details
Cancel
Authenticate

4 In the **Network Settings** window, select the connection that you want to configure, then click **Properties**.

Figure 193 Ubuntu 8: Network Settings > Connections

5 The **Properties** dialog box opens.

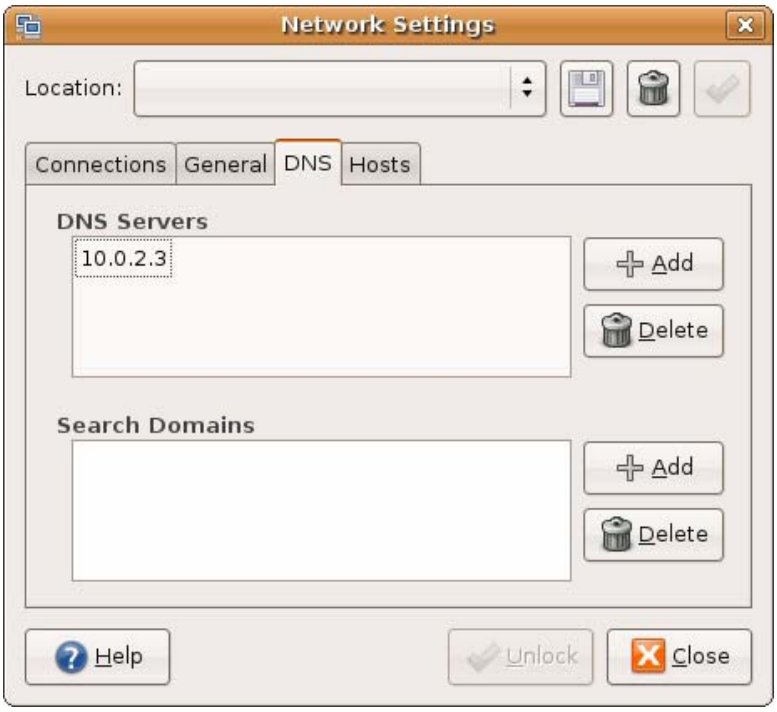
Figure 194 Ubuntu 8: Network Settings > Properties

- In the **Configuration** list, select **Automatic Configuration (DHCP)** if you have a dynamic IP address.
- In the **Configuration** list, select **Static IP address** if you have a static IP address. Fill in the **IP address**, **Subnet mask**, and **Gateway address** fields.

6 Click **OK** to save the changes and close the **Properties** dialog box and return to the **Network Settings** screen.

7 If you know your DNS server IP address(es), click the **DNS** tab in the **Network Settings** window and then enter the DNS server information in the fields provided.

Figure 195 Ubuntu 8: Network Settings > DNS

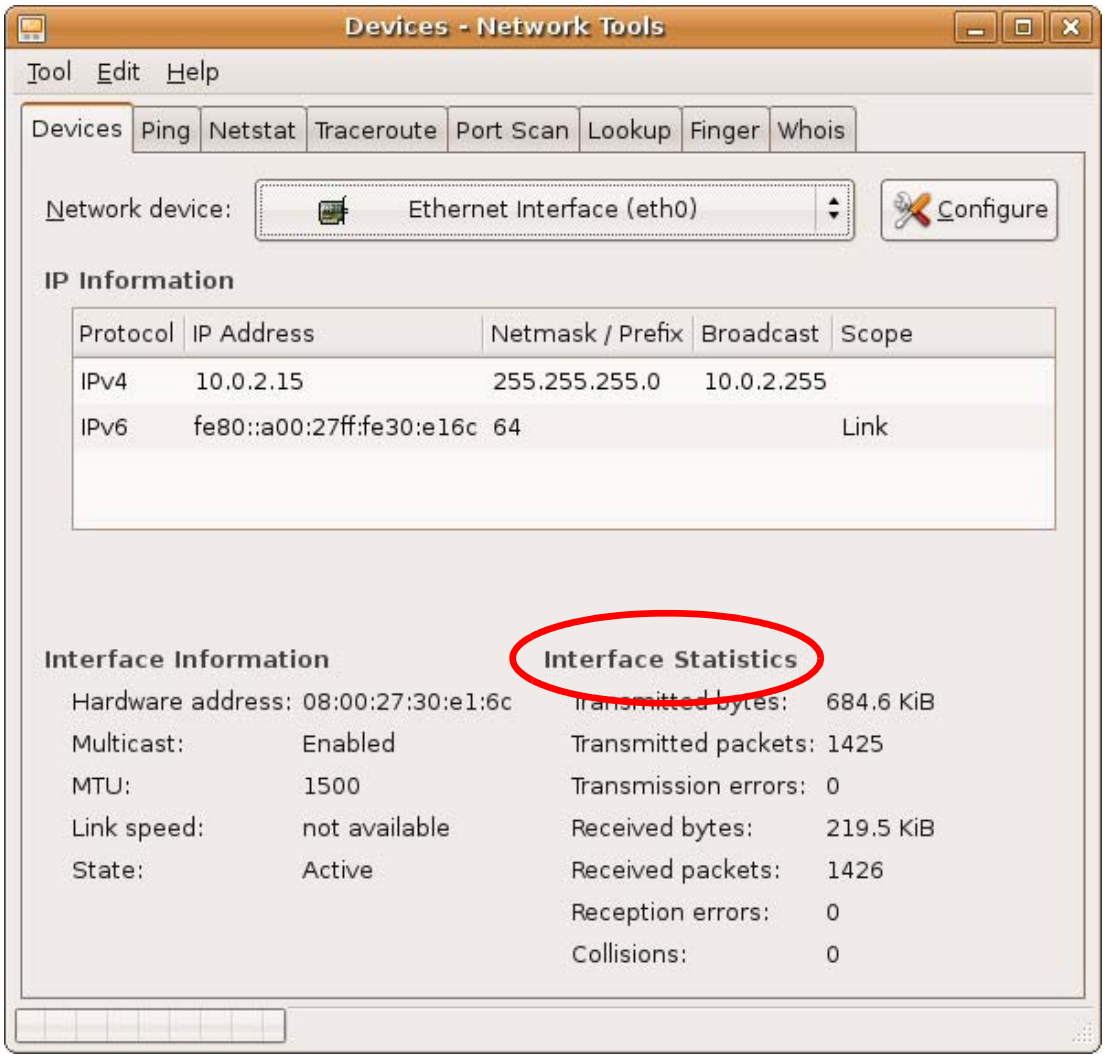


8 Click the **Close** button to apply the changes.

Verifying Settings

Check your TCP/IP properties by clicking **System > Administration > Network Tools**, and then selecting the appropriate **Network device** from the **Devices** tab. The **Interface Statistics** column shows data if your connection is working properly.

Figure 196 Ubuntu 8: Network Tools



Linux: openSUSE 10.3 (KDE)

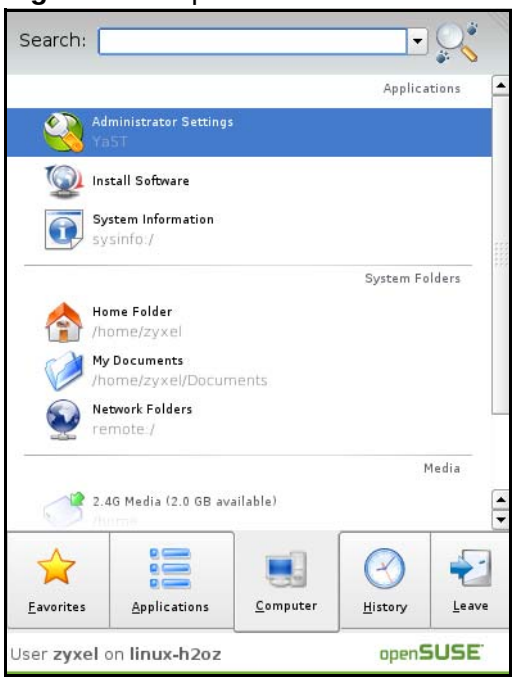
This section shows you how to configure your computer's TCP/IP settings in the K Desktop Environment (KDE) using the openSUSE 10.3 Linux distribution. The procedure, screens and file locations may vary depending on your specific distribution, release version, and individual configuration. The following screens use the default openSUSE 10.3 installation.

Note: Make sure you are logged in as the root administrator.

Follow the steps below to configure your computer IP address in the KDE:

1 Click **K Menu > Computer > Administrator Settings (YaST)**.

Figure 197 openSUSE 10.3: K Menu > Computer Menu

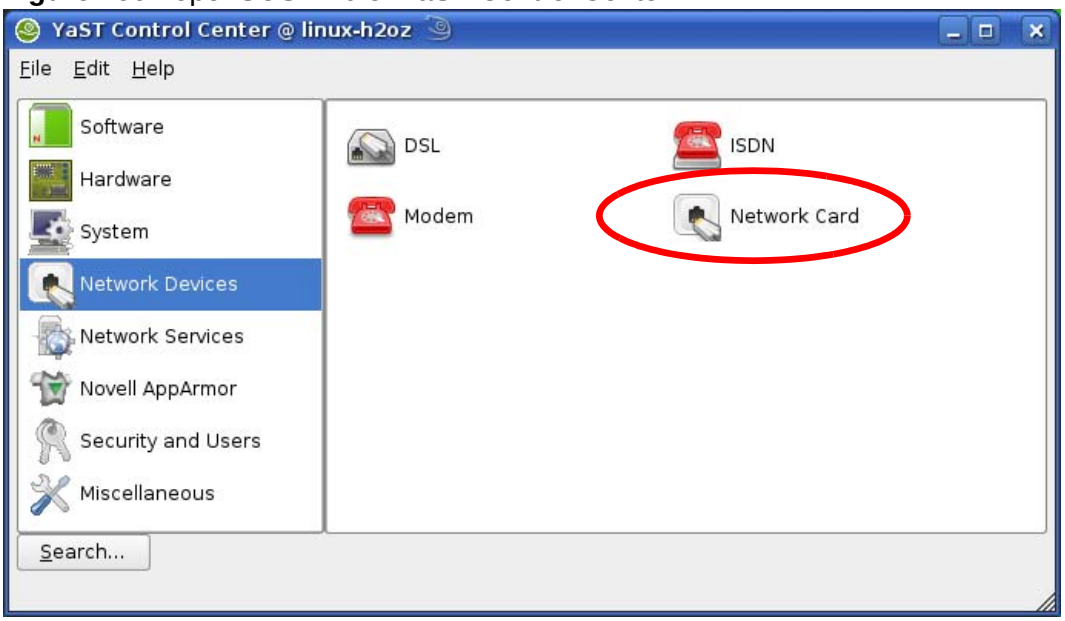


2 When the **Run as Root - KDE su** dialog opens, enter the admin password and click **OK**.

Figure 198 openSUSE 10.3: K Menu > Computer Menu

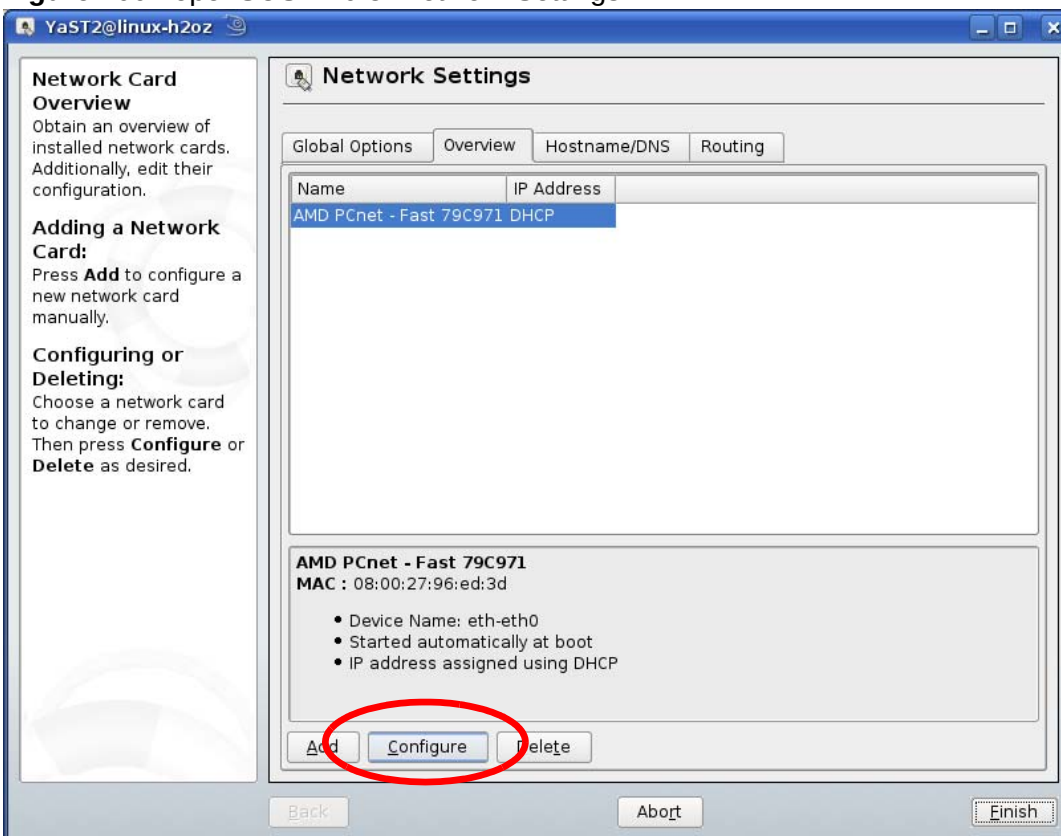
3 When the **YaST Control Center** window opens, select **Network Devices** and then click the **Network Card** icon.

Figure 199 openSUSE 10.3: YaST Control Center



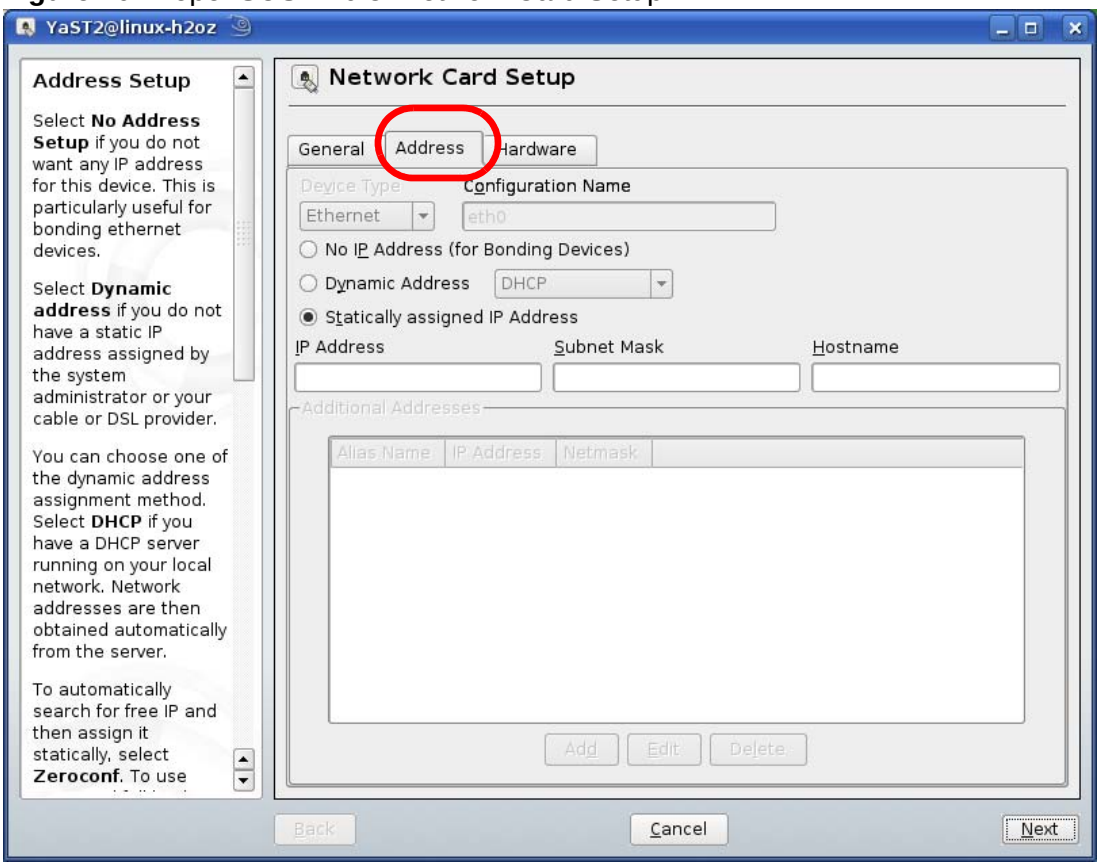
4 When the **Network Settings** window opens, click the **Overview** tab, select the appropriate connection **Name** from the list, and then click the **Configure** button.

Figure 200 openSUSE 10.3: Network Settings



5 When the **Network Card Setup** window opens, click the **Address** tab

Figure 201 openSUSE 10.3: Network Card Setup


YaST2@linux-h2oz
Address Setup
Select No Address Setup if you do not want any IP address for this device. This is particularly useful for bonding ethernet devices.
Select Dynamic address if you do not have a static IP address assigned by the system administrator or your cable or DSL provider.
You can choose one of the dynamic address assignment method. Select DHCP if you have a DHCP server running on your local network. Network addresses are then obtained automatically from the server.
To automatically search for free IP and then assign it statically, select Zeroconf. To use
Network Card Setup
General
Address
Hardware
Device Type
Configuration Name
Ethernet
eth0
No IP Address (for Bonding Devices)
Dynamic Address
DHCP
Statically assigned IP Address
IP Address
Subnet Mask
Hostname
Additional Addresses
Alias Name
IP Address
Netmask
Add
Edit
Delete
Back
Cancel
Next

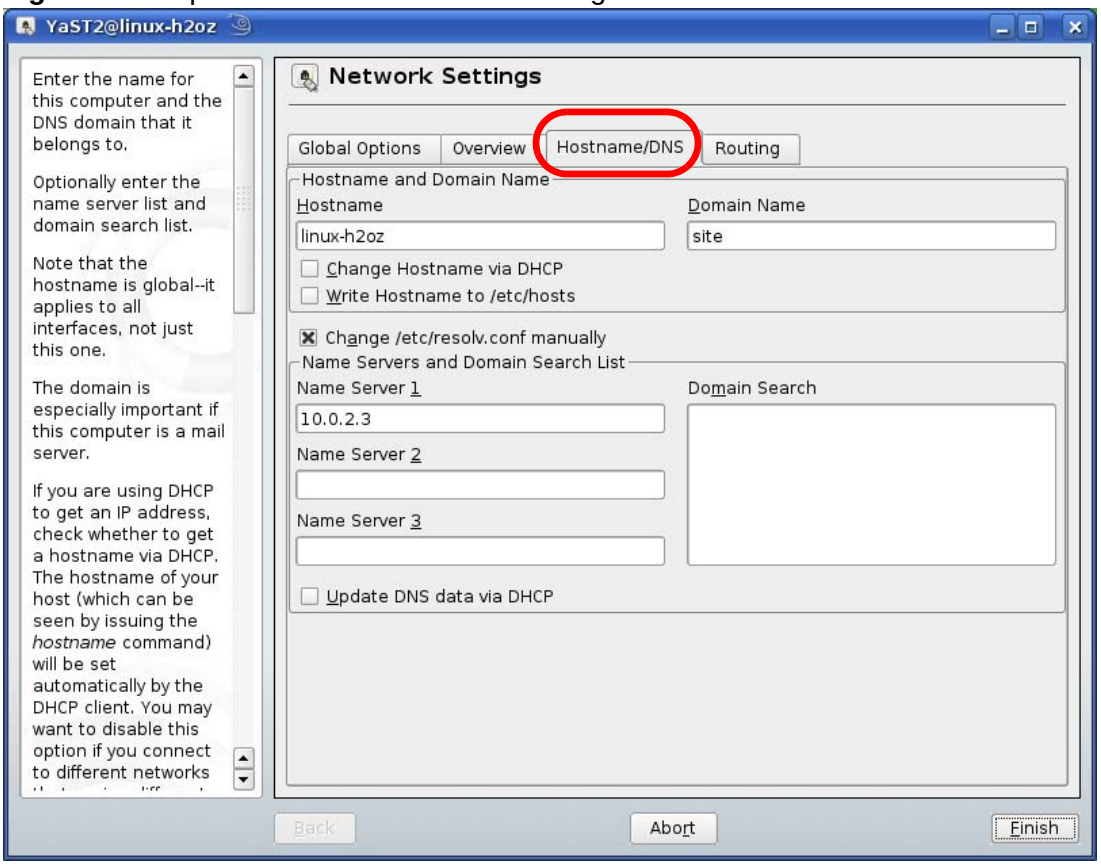
6 Select **Dynamic Address (DHCP)** if you have a dynamic IP address.

Select **Statically assigned IP Address** if you have a static IP address. Fill in the **IP address**, **Subnet mask**, and **Hostname** fields.

7 Click **Next** to save the changes and close the **Network Card Setup** window.

8 If you know your DNS server IP address(es), click the **Hostname/DNS** tab in **Network Settings** and then enter the DNS server information in the fields provided.

Figure 202 openSUSE 10.3: Network Settings


YaST2@linux-h2oz
Enter the name for this computer and the DNS domain that it belongs to.
Optionally enter the name server list and domain search list.
Note that the hostname is global--it applies to all interfaces, not just this one.
The domain is especially important if this computer is a mail server.
If you are using DHCP to get an IP address, check whether to get a hostname via DHCP. The hostname of your host (which can be seen by issuing the hostname command) will be set automatically by the DHCP client. You may want to disable this option if you connect to different networks
Network Settings
Global Options
Overview
Hostname/DNS
Routing
Hostname and Domain Name
Hostname
linux-h2oz
Domain Name
site
Change Hostname via DHCP
Write Hostname to /etc/hosts
Change /etc/resolv.conf manually
Name Servers and Domain Search List
Name Server 1
10.0.2.3
Domain Search
Name Server 2
Name Server 3
Update DNS data via DHCP
Back
Abort
Finish

9 Click **Finish** to save your settings and close the window.

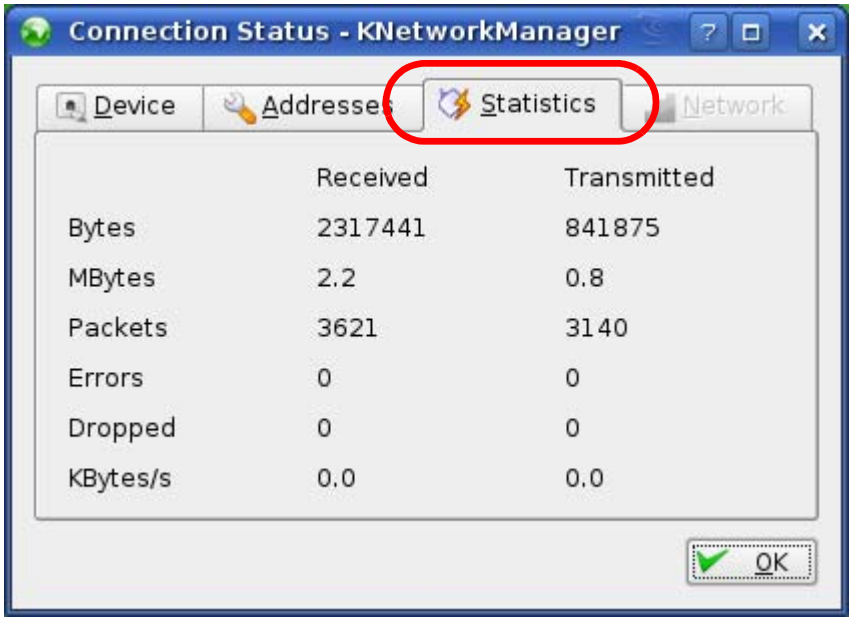
Verifying Settings

Click the **KNetwork Manager** icon on the **Task bar** to check your TCP/IP properties. From the **Options** sub-menu, select **Show Connection Information**.

Figure 203 openSUSE 10.3: KNetwork Manager

When the **Connection Status - KNetwork Manager** window opens, click the **Statistics tab** to see if your connection is working properly.

Figure 204 openSUSE: Connection Status - KNetwork Manager



C

Pop-up Windows, JavaScripts and Java Permissions

In order to use the web configurator you need to allow:

- Web browser pop-up windows from your device.
- JavaScripts (enabled by default).
- Java permissions (enabled by default).

Note: Internet Explorer 6 screens are used here. Screens for other Internet Explorer versions may vary.

Internet Explorer Pop-up Blockers

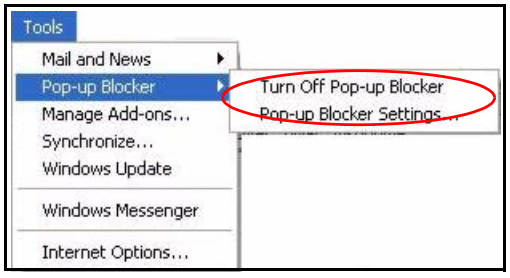
You may have to disable pop-up blocking to log into your device.

Either disable pop-up blocking (enabled by default in Windows XP SP (Service Pack) 2) or allow pop-up blocking and create an exception for your device's IP address.

Disable pop-up Blockers

1 In Internet Explorer, select **Tools**, **Pop-up Blocker** and then select **Turn Off Pop-up Blocker**.

Figure 205 Pop-up Blocker



You can also check if pop-up blocking is disabled in the **Pop-up Blocker** section in the **Privacy** tab.

1 In Internet Explorer, select **Tools**, **Internet Options**, **Privacy**.

2 Clear the **Block pop-ups** check box in the **Pop-up Blocker** section of the screen. This disables any web pop-up blockers you may have enabled.

Figure 206 Internet Options: Privacy

3 Click **Apply** to save this setting.

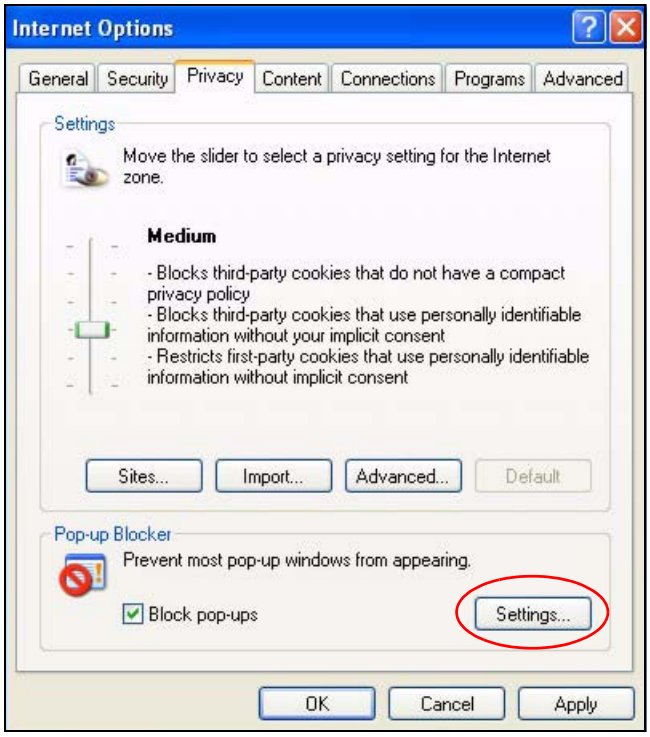
Enable pop-up Blockers with Exceptions

Alternatively, if you only want to allow pop-up windows from your device, see the following steps.

1 In Internet Explorer, select **Tools**, **Internet Options** and then the **Privacy** tab.

2 Select **Settings...**to open the **Pop-up Blocker Settings** screen.

Figure 207 Internet Options: Privacy



3 Type the IP address of your device (the web page that you do not want to have blocked) with the prefix “http://”. For example, http://192.168.167.1.

4 Click **Add** to move the IP address to the list of **Allowed sites**.

Figure 208 Pop-up Blocker Settings

Pop-up Blocker Settings
Exceptions
Pop-ups are currently blocked. You can allow pop-ups from specific Web sites by adding the site to the list below.
Address of Web site to allow:
http://192.168.1.1
Add
Allowed sites:
Remove
Remove All
Notifications and Filter Level
Play a sound when a pop-up is blocked.
Show Information Bar when a pop-up is blocked.
Filter Level:
Medium: Block most automatic pop-ups
Pop-up Blocker FAQ
Close

5 Click **Close** to return to the **Privacy** screen.

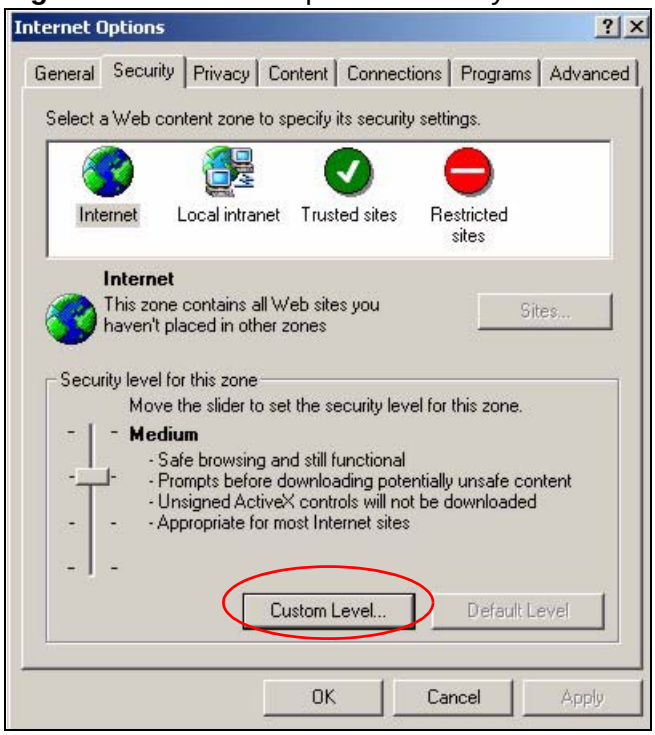
6 Click **Apply** to save this setting.

JavaScripts

If pages of the web configurator do not display properly in Internet Explorer, check that JavaScripts are allowed.

1 In Internet Explorer, click **Tools**, **Internet Options** and then the **Security** tab.

Figure 209 Internet Options: Security



2 Click the **Custom Level...** button.

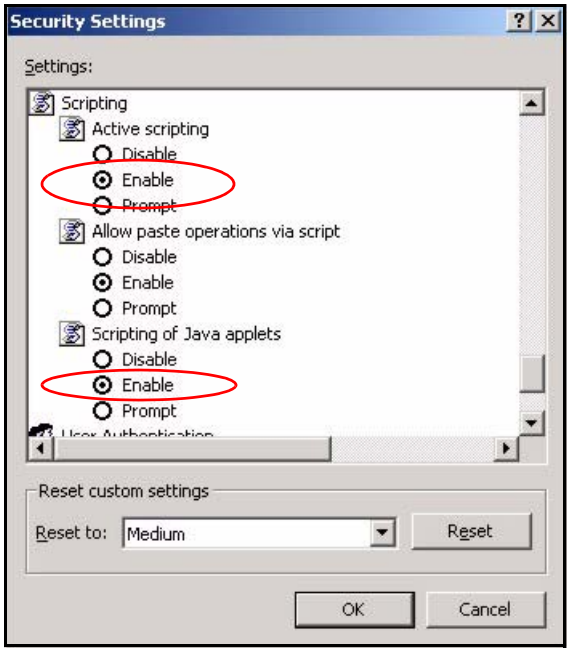
3 Scroll down to **Scripting**.

4 Under **Active scripting** make sure that **Enable** is selected (the default).

5 Under **Scripting of Java applets** make sure that **Enable** is selected (the default).

6 Click **OK** to close the window.

Figure 210 Security Settings - Java Scripting



Java Permissions

1 From Internet Explorer, click **Tools**, **Internet Options** and then the **Security** tab.

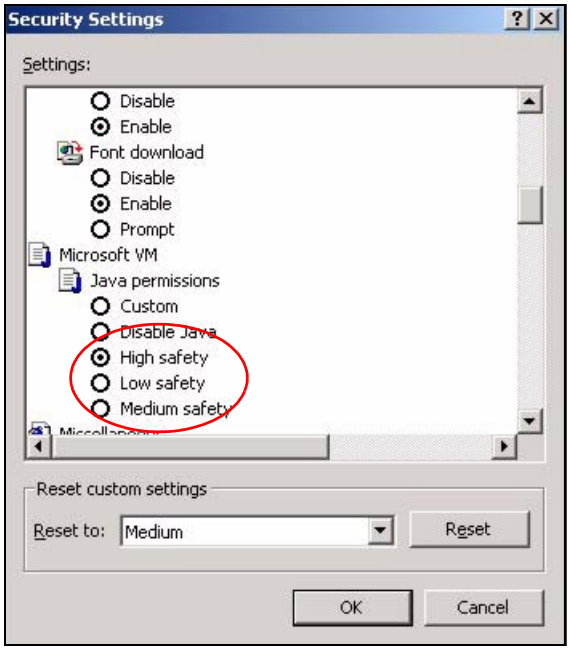
2 Click the **Custom Level...** button.

3 Scroll down to **Microsoft VM**.

4 Under **Java permissions** make sure that a safety level is selected.

5 Click **OK** to close the window.

Figure 211 Security Settings - Java



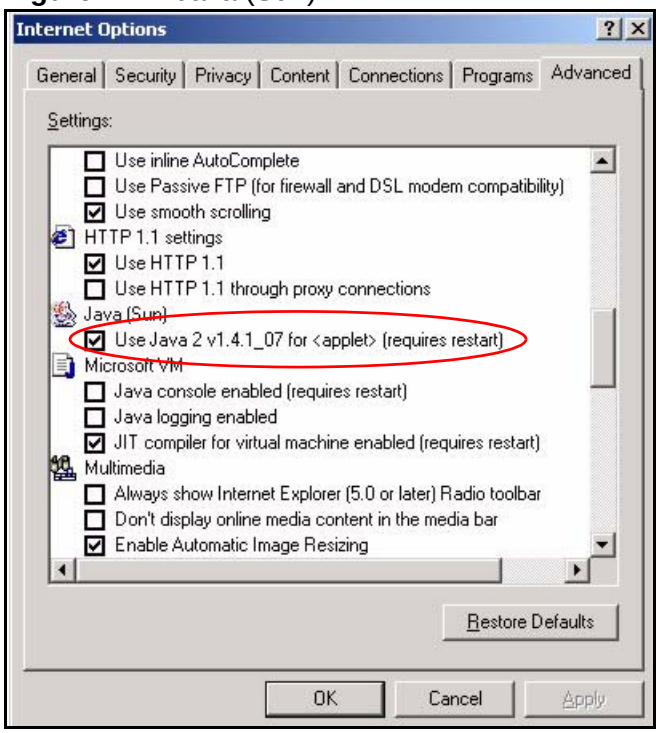
JAVA (Sun)

1 From Internet Explorer, click **Tools**, **Internet Options** and then the **Advanced** tab.

2 Make sure that **Use Java 2 for <applet>** under **Java (Sun)** is selected.

3 Click **OK** to close the window.

Figure 212 Java (Sun)



D

IP Addresses and Subnetting

This appendix introduces IP addresses and subnet masks.

IP addresses identify individual devices on a network. Every networking device (including computers, servers, routers, printers, etc.) needs an IP address to communicate across the network. These networking devices are also known as hosts.

Subnet masks determine the maximum number of possible hosts on a network. You can also use subnet masks to divide one network into multiple sub-networks.

Introduction to IP Addresses

One part of the IP address is the network number, and the other part is the host ID. In the same way that houses on a street share a common street name, the hosts on a network share a common network number. Similarly, as each house has its own house number, each host on the network has its own unique identifying number - the host ID. Routers use the network number to send packets to the correct network, while the host ID determines to which host on the network the packets are delivered.

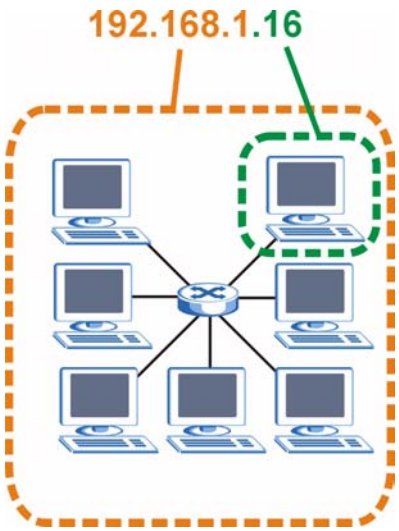
Structure

An IP address is made up of four parts, written in dotted decimal notation (for example, 192.168.1.1). Each of these four parts is known as an octet. An octet is an eight-digit binary number (for example 11000000, which is 192 in decimal notation).

Therefore, each octet has a possible range of 00000000 to 11111111 in binary, or 0 to 255 in decimal.

The following figure shows an example IP address in which the first three octets (192.168.1) are the network number, and the fourth octet (16) is the host ID.

Figure 213 Network Number and Host ID



How much of the IP address is the network number and how much is the host ID varies according to the subnet mask.

Subnet Masks

A subnet mask is used to determine which bits are part of the network number, and which bits are part of the host ID (using a logical AND operation). The term “subnet” is short for “sub-network”.

A subnet mask has 32 bits. If a bit in the subnet mask is a “1” then the corresponding bit in the IP address is part of the network number. If a bit in the subnet mask is “0” then the corresponding bit in the IP address is part of the host ID.

The following example shows a subnet mask identifying the network number (in bold text) and host ID of an IP address (192.168.1.2 in decimal).

Table 146 IP Address Network Number and Host ID Example

	1ST OCTET: (192)	2ND OCTET: (168)	3RD OCTET: (1)	4TH OCTET (2)
IP Address (Binary)	11000000	10101000	00000001	00000010
Subnet Mask (Binary)	**11111111**	**11111111**	**11111111**	00000000
Network Number	**11000000**	**10101000**	**00000001**	
Host ID				00000010

By convention, subnet masks always consist of a continuous sequence of ones beginning from the leftmost bit of the mask, followed by a continuous sequence of zeros, for a total number of 32 bits.

Subnet masks can be referred to by the size of the network number part (the bits with a “1” value). For example, an “8-bit mask” means that the first 8 bits of the mask are ones and the remaining 24 bits are zeroes.

Subnet masks are expressed in dotted decimal notation just like IP addresses. The following examples show the binary and decimal notation for 8-bit, 16-bit, 24-bit and 29-bit subnet masks.

Table 147 Subnet Masks

	BINARY				DECIMAL
	1ST OCTET	2ND OCTET	3RD OCTET	4TH OCTET	
8-bit mask	11111111	00000000	00000000	00000000	255.0.0.0
16-bit mask	11111111	11111111	00000000	00000000	255.255.0.0
24-bit mask	11111111	11111111	11111111	00000000	255.255.255.0
29-bit mask	11111111	11111111	11111111	11111000	255.255.255.248

Network Size

The size of the network number determines the maximum number of possible hosts you can have on your network. The larger the number of network number bits, the smaller the number of remaining host ID bits.

An IP address with host IDs of all zeros is the IP address of the network (192.168.1.0 with a 24-bit subnet mask, for example). An IP address with host IDs of all ones is the broadcast address for that network (192.168.1.255 with a 24-bit subnet mask, for example).

As these two IP addresses cannot be used for individual hosts, calculate the maximum number of possible hosts in a network as follows:

Table 148 Maximum Host Numbers

SUBNET MASK		HOST ID SIZE		MAXIMUM NUMBER OF HOSTS
8 bits	255.0.0.0	24 bits	$2^{24} – 2$	16777214
16 bits	255.255.0.0	16 bits	$2^{16} – 2$	65534
24 bits	255.255.255.0	8 bits	$2^{8} – 2$	254
29 bits	255.255.255.248	3 bits	$2^{3} – 2$	6

Notation

Since the mask is always a continuous number of ones beginning from the left, followed by a continuous number of zeros for the remainder of the 32 bit mask, you can simply specify the number of ones instead of writing the value of each octet. This is usually specified by writing a "/" followed by the number of bits in the mask after the address.

For example, 192.1.1.0 /25 is equivalent to saying 192.1.1.0 with subnet mask 255.255.255.128.

The following table shows some possible subnet masks using both notations.

Table 149 Alternative Subnet Mask Notation

SUBNET MASK	ALTERNATIVE NOTATION	LAST OCTET (BINARY)	LAST OCTET (DECIMAL)
255.255.255.0	/24	0000 0000	0
255.255.255.128	/25	1000 0000	128
255.255.255.192	/26	1100 0000	192
255.255.255.224	/27	1110 0000	224
255.255.255.240	/28	1111 0000	240
255.255.255.248	/29	1111 1000	248
255.255.255.252	/30	1111 1100	252

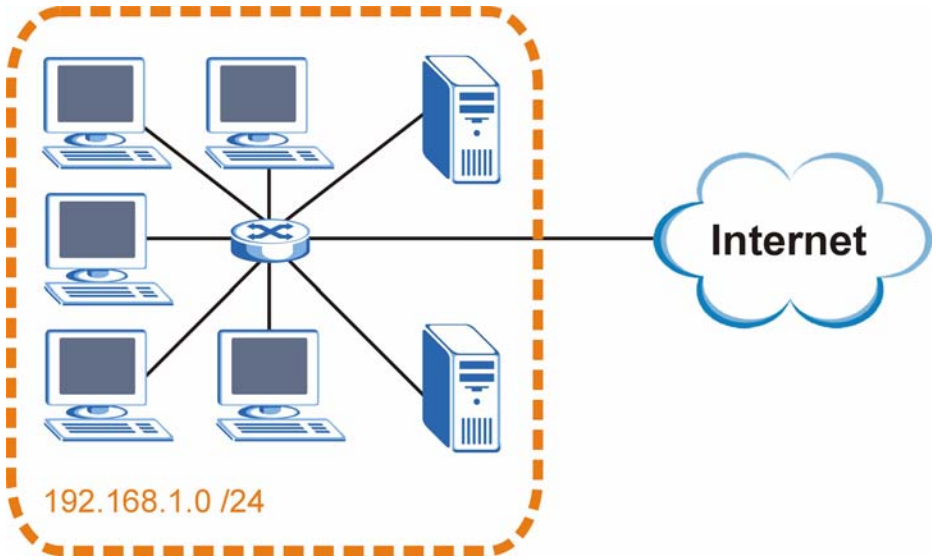
Subnetting

You can use subnetting to divide one network into multiple sub-networks. In the following example a network administrator creates two sub-networks to isolate a group of servers from the rest of the company network for security reasons.

In this example, the company network address is 192.168.1.0. The first three octets of the address (192.168.1) are the network number, and the remaining octet is the host ID, allowing a maximum of 2^8 – 2 or 254 possible hosts.

The following figure shows the company network before subnetting.

Figure 214 Subnetting Example: Before Subnetting

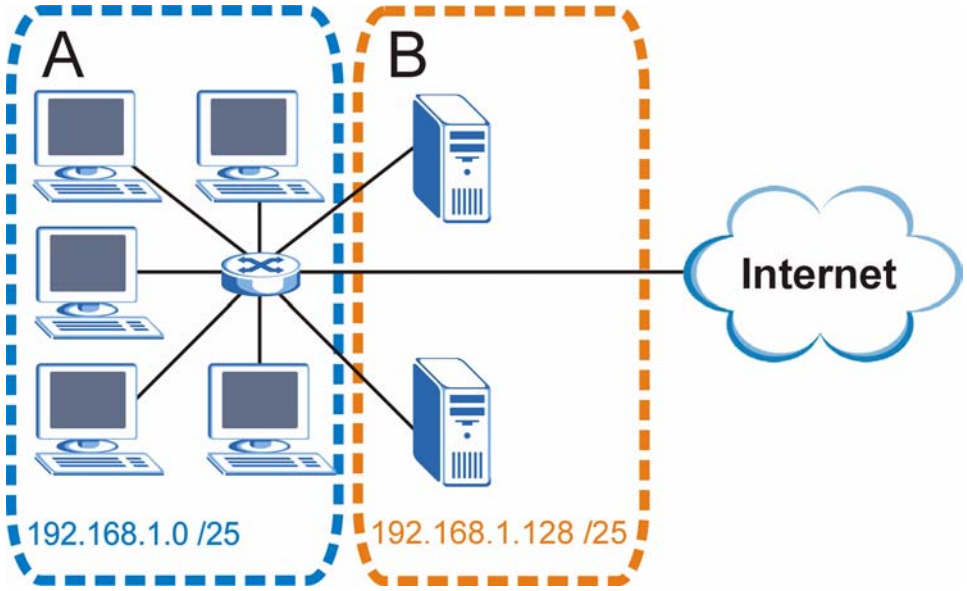


You can “borrow” one of the host ID bits to divide the network 192.168.1.0 into two separate sub-networks. The subnet mask is now 25 bits (255.255.255.128 or /25).

The “borrowed” host ID bit can have a value of either 0 or 1, allowing two subnets; 192.168.1.0 /25 and 192.168.1.128 /25.

The following figure shows the company network after subnetting. There are now two sub-networks, **A** and **B**.

Figure 215 Subnetting Example: After Subnetting



In a 25-bit subnet the host ID has 7 bits, so each sub-network has a maximum of $2^7 - 2$ or 126 possible hosts (a host ID of all zeroes is the subnet's address itself, all ones is the subnet's broadcast address).

192.168.1.0 with mask 255.255.255.128 is subnet **A** itself, and 192.168.1.127 with mask 255.255.255.128 is its broadcast address. Therefore, the lowest IP address that can be assigned to an actual host for subnet **A** is 192.168.1.1 and the highest is 192.168.1.126.

Similarly, the host ID range for subnet **B** is 192.168.1.129 to 192.168.1.254.

Example: Four Subnets

The previous example illustrated using a 25-bit subnet mask to divide a 24-bit address into two subnets. Similarly, to divide a 24-bit address into four subnets, you need to "borrow" two host ID bits to give four possible combinations (00, 01, 10 and 11). The subnet mask is 26 bits (11111111.11111111.11111111.**11**000000) or 255.255.255.192.

Each subnet contains 6 host ID bits, giving 2^6 - 2 or 62 hosts for each subnet (a host ID of all zeroes is the subnet itself, all ones is the subnet's broadcast address).

Table 150 Subnet 1

IP/SUBNET MASK	NETWORK NUMBER	LAST OCTET BIT VALUE
IP Address (Decimal)	192.168.1.	0
IP Address (Binary)	11000000.10101000.00000001.	**00**000000
Subnet Mask (Binary)	11111111.11111111.11111111.	**11**000000
Subnet Address: 192.168.1.0	Lowest Host ID: 192.168.1.1	
Broadcast Address: 192.168.1.63	Highest Host ID: 192.168.1.62	

Table 151 Subnet 2

IP/SUBNET MASK	NETWORK NUMBER	LAST OCTET BIT VALUE
IP Address	192.168.1.	64
IP Address (Binary)	11000000.10101000.00000001.	**01**000000
Subnet Mask (Binary)	11111111.11111111.11111111.	**11**000000
Subnet Address: 192.168.1.64	Lowest Host ID: 192.168.1.65	
Broadcast Address: 192.168.1.127	Highest Host ID: 192.168.1.126	

Table 152 Subnet 3

IP/SUBNET MASK	NETWORK NUMBER	LAST OCTET BIT VALUE
IP Address	192.168.1.	128
IP Address (Binary)	11000000.10101000.00000001.	**10**000000
Subnet Mask (Binary)	11111111.11111111.11111111.	**11**000000
Subnet Address: 192.168.1.128	Lowest Host ID: 192.168.1.129	
Broadcast Address: 192.168.1.191	Highest Host ID: 192.168.1.190	

Table 153 Subnet 4

IP/SUBNET MASK	NETWORK NUMBER	LAST OCTET BIT VALUE
IP Address	192.168.1.	192
IP Address (Binary)	11000000.10101000.00000001.	**11**000000
Subnet Mask (Binary)	11111111.11111111.11111111.	**11**000000

Table 153 Subnet 4 (continued)

IP/SUBNET MASK	NETWORK NUMBER	LAST OCTET BIT VALUE
Subnet Address: 192.168.1.192	Lowest Host ID: 192.168.1.193	
Broadcast Address: 192.168.1.255	Highest Host ID: 192.168.1.254	

Example: Eight Subnets

Similarly, use a 27-bit mask to create eight subnets (000, 001, 010, 011, 100, 101, 110 and 111).

The following table shows IP address last octet values for each subnet.

Table 154 Eight Subnets

SUBNET	SUBNET ADDRESS	FIRST ADDRESS	LAST ADDRESS	BROADCAST ADDRESS
1	0	1	30	31
2	32	33	62	63
3	64	65	94	95
4	96	97	126	127
5	128	129	158	159
6	160	161	190	191
7	192	193	222	223
8	224	225	254	255

Subnet Planning

The following table is a summary for subnet planning on a network with a 24-bit network number.

Table 155 24-bit Network Number Subnet Planning

NO. “BORROWED” HOST BITS	SUBNET MASK	NO. SUBNETS	NO. HOSTS PER SUBNET
1	255.255.255.128 (/25)	2	126
2	255.255.255.192 (/26)	4	62
3	255.255.255.224 (/27)	8	30
4	255.255.255.240 (/28)	16	14
5	255.255.255.248 (/29)	32	6
6	255.255.255.252 (/30)	64	2
7	255.255.255.254 (/31)	128	1

The following table is a summary for subnet planning on a network with a 16-bit network number.

Table 156 16-bit Network Number Subnet Planning

NO. "BORROWED" HOST BITS	SUBNET MASK	NO. SUBNETS	NO. HOSTS PER SUBNET
1	255.255.128.0 (/17)	2	32766
2	255.255.192.0 (/18)	4	16382
3	255.255.224.0 (/19)	8	8190
4	255.255.240.0 (/20)	16	4094
5	255.255.248.0 (/21)	32	2046
6	255.255.252.0 (/22)	64	1022
7	255.255.254.0 (/23)	128	510
8	255.255.255.0 (/24)	256	254
9	255.255.255.128 (/25)	512	126
10	255.255.255.192 (/26)	1024	62
11	255.255.255.224 (/27)	2048	30
12	255.255.255.240 (/28)	4096	14
13	255.255.255.248 (/29)	8192	6
14	255.255.255.252 (/30)	16384	2
15	255.255.255.254 (/31)	32768	1

Configuring IP Addresses

Where you obtain your network number depends on your particular situation. If the ISP or your network administrator assigns you a block of registered IP addresses, follow their instructions in selecting the IP addresses and the subnet mask.

If the ISP did not explicitly give you an IP network number, then most likely you have a single user account and the ISP will assign you a dynamic IP address when the connection is established. If this is the case, it is recommended that you select a network number from 192.168.0.0 to 192.168.255.0. The Internet Assigned Number Authority (IANA) reserved this block of addresses specifically for private use; please do not use any other number unless you are told otherwise. You must also enable Network Address Translation (NAT) on the V500.

Once you have decided on the network number, pick an IP address for your V500 that is easy to remember (for instance, 192.168.1.1) but make sure that no other device on your network is using that IP address.

The subnet mask specifies the network number portion of an IP address. Your V500 will compute the subnet mask automatically based on the IP address that

you entered. You don't need to change the subnet mask computed by the V500 unless you are instructed to do otherwise.

Private IP Addresses

Every machine on the Internet must have a unique address. If your networks are isolated from the Internet (running only between two branch offices, for example) you can assign any IP addresses to the hosts without problems. However, the Internet Assigned Numbers Authority (IANA) has reserved the following three blocks of IP addresses specifically for private networks:

- 10.0.0.0 — 10.255.255.255
- 172.16.0.0 — 172.31.255.255
- 192.168.0.0 — 192.168.255.255

You can obtain your IP address from the IANA, from an ISP, or it can be assigned from a private network. If you belong to a small organization and your Internet access is through an ISP, the ISP can provide you with the Internet addresses for your local networks. On the other hand, if you are part of a much larger organization, you should consult your network administrator for the appropriate IP addresses.

Regardless of your particular situation, do not create an arbitrary IP address; always follow the guidelines above. For more information on address assignment, please refer to RFC 1597, *Address Allocation for Private Internets* and RFC 1466, *Guidelines for Management of IP Address Space.*

E

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The device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

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- This device must accept any interference received, including interference that may cause undesired operations.

This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this device does cause harmful interference to radio/television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and the receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

Notices

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Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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Table 157 Open Source Components

SOFTWARE	VERSION	URL
Linux	2.4.17	http://www.linux.org/info/gnu.html
busybox	0.61pre	http://www.busybox.net/license.html
MSNTP	1.6	http://www.freebsdsoftware.org/net/msntp.html
uClibc	0.9.19	http://www.uclibc.org/about.html
udhcp	0.9.7	http://freshmeat.net/projects/udhcp/
utelnetd	0.1.4	http://sourceforge.net/projects/utelnetd/
zlib	1.2.3	http://www.zlib.net/zlib_license.html
bftpd	1.4.1	http://bftpd.sourceforge.net/downloads/COPYING
c-ares	1.3.1	http://c-ares.haxx.se/license.html
inadyn	1.96.2	http://www.inatech.eu/inadyn/
iptables	1.3.8	http://www.netfilter.org/about.html#license
libosip2	3.1.0	http://www.gnu.org/software/osip/
monit	5.0	http://mmonit.com/monit/
openssl	0.9.7d	http://www.openssl.org/about/
stunnel	4.15	http://www.stunnel.org/
tftp	hpa0.42	http://freshmeat.net/projects/tftp-hpa/
libupnp	1.3.1	http://upnp.sourceforge.net/
mini_httpd	1.19	http://acme.com/software/mini_httpd/
pppd	1.68	http://ppp.samba.org/ppp/README.html

G

Customer Support

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Required Information

- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

"+" is the (prefix) number you dial to make an international telephone call.

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